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WATER LINES

NEWS FROM THE WATER RESOURCES DIVISION
OF THE MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

THE BEAN LAKE III DECISION: *THE IMPLICATIONS*

By Curt Martin and Dan Bushnell, DNRC

In recent weeks, a Montana Supreme Court decision has been much in the news and discussed in private and public forums. This decision, commonly called the Bean Lake III decision, has been critiqued for the far-reaching impact it is purported to have upon our existing water rights system. As the agency with water rights responsibilities in Montana, the Department of Natural Resources and Conservation (DNRC) would like to help provide some context and clarify certain facts about the practical implications of the case.

The Supreme Court focused on whether the instream or inlake water rights for fish, wildlife, or recreation that have already been filed could proceed in the ongoing Montana Water Court general water rights adjudication, or whether they should be dismissed because of the lack of a diversion, impoundment, or "capture" of the water. The issue was not whether such instream flow rights for fish, wildlife, or recreation are superior to all other water rights, or whether any such new "senior" rights should be established.

The Prior Appropriation Doctrine, which has been in place in Montana since 1865, continues to be the law in the adjudication and administration of water rights today. The Supreme Court's decision is based on this doctrine. The Prior Appropriation Doctrine is not a preference system. No type of water use is superior to another. The doctrine and the ruling are based simply on "first in time is first in right," regardless of the purpose of the use. Therefore, the ruling did not take away any existing water rights. Any instream or inlake rights that are ultimately recognized by the Water Court will carry a priority date, and will be administered according to that priority date just like any diversionary water right.

In the Bean Lake III decision the Supreme Court found that fish, wildlife, and recreation claims with a diversion could be valid. It also found that claims where no diversion is physically necessary, such as fish, wildlife, and recreation claims and stock-watering claims, can also be valid "when the facts and circumstances indicate that notice of the appropriator's intent has been given."

The potential impacts that result from this decision are summarized below.

Claim Type	Total Claims
Total Claims - All Purposes	220, 000+
Claims for - Fish, Wildlife, or Recreation Purpose	13, 415
Physical Means of Diversion or Impoundment	9,185
Possibly No Physical Means of Diversion or Impoundment	4,230
Direct from the Source – Wildlife	3,510
BLM	3,270
Other "Instream Flow"	720
Private	422
State Government	153
DFWP	151
Board of Land Commissioners	2
Murphy Rights	106
Other DFWP	45
Federal Government	145

Of the over 220,000 claims that were filed statewide, 13,415 claimed some type of fish, wildlife, or recreational purpose. Of those, 9,185 identified some type of physical diversion,

(Continued on next page)

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(Bean Lake continued from page 1)

impoundment, or capture of the water, such as by dams, ditches, or pipelines.

Most of the remaining 4,230 claims have not yet been examined by the DNRC. Often, examination of these claims and further discussions with the claimants reveal that there was some physical manipulation of the water, such as a spring development, dam, or excavation, that was not reported on the original claim form. Therefore, the number of actual "instream flow" claims will eventually be less than 4,000.

In fact, 3,510 of those 4,230 claims identify wildlife drinking "directly from the source" and may be overlapping with instream livestock-watering rights. Most (3,270) of these were filed by the U.S. Bureau of Land Management (BLM) in north central and northeastern Montana for water out of small pits and some natural potholes.

That leaves a total of 720 claims that may be equated as "typical" for instream flows or inlake water levels. Four hundred twenty-two of the 720 "typical" instream flow claims were filed by private parties, and are questionable because language in the statutes, as well the Bean Lake III decision, appears to limit those who could file these types of water right claims to the Montana Department of Fish, Wildlife and Parks (DFWP), and possibly federal agencies.

That leaves 298 government instream and inlake claims, of which 106 are based on "Murphy Rights." If you recall, Murphy Rights are the water rights created by the legislature with priority dates in the early-1970s to protect instream flows for fisheries on 12 of Montana's most pristine "Blue Ribbon" rivers. Those 12 streams are Big Spring and Rock Creeks; the Blackfoot, Gallatin, Madison, Smith, Upper Missouri, Upper Yellowstone, and Flathead Rivers; and the North, South, and Middle Forks of the Flathead.

The remaining 192 claims may have been granted new life by the Bean Lake III decision. A quick review of 45 of those filed by DFWP shows that three relatively large rivers are involved, including the Bighorn below Yellowtail Dam, the Beaverhead below Clark Canyon Dam, and the Bitterroot. In the case of the Bighorn and Beaverhead, the rights may be associated with the creation of the federal dams and are therefore associated with "diversions." In other cases, the DFWP claims appear to be mostly associated with high mountain lakes, fish trap stations, lakes or springs on wildlife management areas, and most of the lakes in the Blackfoot and Clearwater River drainages. These all claim fairly recent priority dates, and therefore have little potential for affecting most senior water rights.

Similarly, most of the claims filed by the federal government are for areas on U.S. Forest Service land upstream of private lands and diversions. Thus, leaving the water in the stream will allow it to flow to the senior, diversionary users.

The Bean Lake III decision also requires the claimants to prove that these water rights met other requirements. It will not be enough to show that the water was used for fish, wildlife, or recreation. The claimant will

have to prove that there was an actual intent to develop a water right for these purposes. It is a common requirement under the Prior Appropriation Doctrine that other water users were provided notice of the intent and the opportunity to seek legal recourse for adverse effects caused by the creation of new water rights. Proving this intent may not be easy.

There will be some instances where these instream flow claims will result in a reduction in the amount of water available for junior water right holders.

The Bean Lake III decision also provides a positive benefit for stock water rights. For the first time since 1865, the Montana Supreme Court has made a clear statement that stock drinking from a stream establishes a water right without the need for a man-made diversion.

The decision may also have implications for future water policy. But this decision does not pose the type of general, statewide threat to the ongoing statewide adjudication, or all existing water rights, as may be feared. We need to keep these facts in context as we attempt to deal with changing and increasing demands for historical, new, and varied water uses.

TRASH RAKE REPLACED AT THE BROADWATER POWER PROJECT

By Walt Anderson, DNRC

The department completed the installation of a new trash rake machine at the Broadwater Power Project last year. The trash rake's function is to clean the intake racks of river debris too large to pass through the turbine. For Broadwater, this means that all debris larger than 3 inches in diameter is strained from the river before it enters the turbine by passing the flow through a set of trash racks with 3-inch bar openings.

The original existing trash rake was designed to reach to the bottom of the racks, through water about 55 feet deep, and drag the racks in an upward direction, thereby scraping debris to the surface. From there, debris was dumped onto a conveyor that transferred it to a point near the first spillway bay. The operation required constant operator surveillance and manual labor with chain saws and hand rakes, and operators were exposed to severe weather and water conditions.

The original system was purchased under a low-bid contract in 1989. By the year 2000, the machine had been severely weakened structurally. Although the machine was still operating, it was clearly at the end of its useful life. Evaluating its true usefulness, safety, and the impacts to power generation as a result of its inadequacies made a strong case for its replacement.

In the fall of 2000, the Broadwater operation and maintenance crew began the process of replacing the existing trash rake. Rather than procure a replacement under a low-bid approach, staff argued successfully that the project qualified for a Request for Proposal (RFP) approach under the Montana Procurement Act. The reasons for this approach are many, but the primary justification was that the complexity of the project required a custom-designed solution. Turbine intake configurations are many, and the type and size of river debris are also quite variable from site to site. In addition, the Broadwater intake was experiencing serious sediment accumulation each year. Trash rake manufacturers approach the problem with about five or six basic designs, varying in quality of manufacture. The Broadwater staff believed it was imperative that the decision be performance-based rather than cost-based, and that the staff's 12 years of experience working on the river should be relied on heavily in order to make the correct decision. A purchase budget was establishing by analyzing past operating data and estimating losses due to trash obstructing the delivery of water to the turbine. Funding authorization was acquired, and the RFP documents were issued in March 2001. The three proposals received were evaluated and scored according to established criteria published in the RFP documents. Kuenz America, whose base of operations is in Austria, was selected and awarded a contract for $434,000.

Trash rake machine at the Broadwater Power Project - Photo by Walter Leiler, Kuenz America

It was hoped that the new machine would be manufactured in time for fall installation. Problems with insurance requirements postponed the installation until May 2002,

(Continued on page 4)

BAIR AND NEVADA CREEK DAM REHABILITATIONS MAKING GOOD PROGRESS

New Spillway Construction at Bair Dam

By James Domino, DNRC

The rehabilitation projects at Bair and Nevada Creek (Phase I) Dams have been completed.

Bair Dam Phase II was delayed for several weeks by a slope failure above the spillway. The installation of a new spillway has been completed. Site restoration and reclamation work are currently under way. The project was completed in December 2002. Phase II included a new concrete spillway, access roads, and a 3-foot embankment raise.

The Nevada Creek Dam Rehabilitation Phase I was completed in December 2002. Smith Construction of Butte, Montana, was awarded the Phase I contract. Phase I construction included an outlet extension, materials processing, toe berm, drain system, and dewatering wells. Phase II at Nevada Creek, the new concrete spillway, will be contracted next year.

Nevada Creek Dam Rehabilitation - Outlet Excavation

(Trash Rake continued from page 3)

however, the trash rake was in place for spring runoff.

The new machine is a prototype design, but relies on proven technology. Essentially, it's a robotic excavator arm and gripper rakehead mounted on a rail-supported trolley. The machine is capable of lifting 9,000 lbs. at the intake racks, has a horizontal reach of 74 feet, and has 270 degrees of rotation. It is easily capable of reaching the required 55 feet of water depth and dragging the intake bottom for some distance upstream of the trash racks. These mechanical features enable the machine to handle all debris, from full-sized cottonwood trees to the finest sediment, and move it from the intake to downstream of the dam.

As a result, the plant has been operating at optimum power-generating levels since its installation, and, for the first time in 13 years, it was unnecessary to dredge the turbine intake after spring runoff. Improvement in plant efficiency directly attributable to the new machine will allow payoff of its purchase price in roughly five to six years, depending on streamflow conditions. After that, the improved efficiency will mean more funds for fixing dams. Most importantly, plant operators are much safer performing the work, and those long hours during spring runoff aren't so long anymore.

WATER RESOURCES DIVISION MOVE

By Cindy Forgey, DNRC

In March of 1996, the DNRC Water Resources Division moved from the Metcalf building on the capitol complex to its current location downtown on the walking mall. Six years later we're moving back across town to our new home at 1424 9th Ave., just down the street from DNRC's headquarters. Our new location was formerly the headquarters of the Montana Department of Commerce. Department of Administration, General Services Division, has hired Karhu-Cullen Architects who have prepared structural, electrical and mechanical drawings. Remodeling has begun and we expect to be in our new location in March of 2003. The Water Resources Regional Office will be moving into this location also.

We've enjoyed being downtown and will miss the good coffee and excitement of the downtown area. But there are many positive sides to our move such as: more space, co-locating with the regional office, much closer to the main DNRC building, and easier accessibility for the public. Maybe the most important benefit of the move will be to the Montana taxpayers, as our costs will be reduced by more than half.

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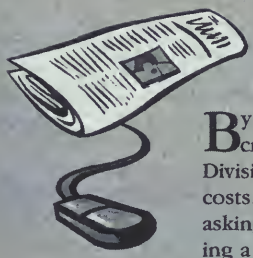


By now you've probably heard that the State is faced with a severe budget crisis this year. As with other departments, the DNRC Water Resources Division will be facing some budget shortfalls. We need your help in cutting costs. We will continue to develop a newsletter on a quarterly basis, but are asking those with Internet access to view Water Lines on the web versus receiving a hard copy.

We are currently developing an e-mail address list to notify readers when the newest issue has been posted on the Web. We will send you a message containing to a link that will take you directly to the newsletter on our homepage at http://www.dnrc.state.mt.us/wrd/home.htm. If you'd like to be added to this list, please send your e-mail address to cforgey@state.mt.us

We hope to continue producing Water Lines, and appreciate any help you can give us to get through this budget crisis.

THE MONTANA WATERCOURSE: EDUCATION FOR EVERYONE

By Karen Filipovich, DNRC

The Montana Watercourse has a mission to educate all adult and youth water users in the state. As former director Mary Ellen Wolfe pointed out, it "is really the only statewide water resource education program that provides both materials and training focused on Montana's water resources for both youth and adults." The program acts as a bridge between the technical expertise in the agencies and the thirst for understanding in our communities and schools.

DNRC has been instrumental in the formation and continued operation of the Montana Watercourse. According to Rich Moy, chief of DNRC's Water Management Bureau, DNRC has "a clear policy statement in the law (MCA 85-1-101) mandating a State Water Plan to improve water management in the state." The State Water Plan itself also recommends improving the general knowledge of water issues. In 1989, Moy and Dennis Nelson, director of The Watercourse on the Montana State University (MSU) campus, co-founded the Montana Watercourse as part of an overall effort to address these concerns. It was conceived as an entity with no stake in any watershed or political position.

Situated on the MSU campus, the Montana Watercourse is a hybrid between DNRC and MSU. The director, Karen Filipovich, is an employee of the DNRC Water Resources Division; the other staff members are MSU employees. This hybrid gives the program the ability to capitalize on the resources of the university and broader education community while its mission ensures that it will always serve all water users.

The Montana Watercourse's adult, community education efforts are directed to the specific topics and needs of landowners and other water users throughout the state. Its projects include water rights workshops and a book, wetlands workshops and publications, volunteer water quality monitoring, education on water management, and helping people understand their watersheds and establish local watershed groups. Support for established watershed based efforts through work on the Montana Watershed Coordination Council and with individual groups is also part of its ongoing role in providing informational, educational, and support services to all water users. The program works with other collaborators to create interest, understanding, and action, and it brings in the technical expertise that is available from a wide array of experts at state and federal resource agencies, local conservation districts, and many other local groups to a broader audience.

One example of this collaborative approach is the Know Your Watershed Program. Filipovich, the Montana Watercourse director, administers the program. She has taken a strong role in promoting the Know Your Watershed approach, and supports watershed efforts through such activities as working with the Montana Watershed Coordinators Council and facilitating watershed groups. The Montana Watercourse works with local sponsors like conservation districts and other stakeholders to develop an event specially tailored to address the scientific and socio-economic issues in a specific watershed. The neutral workshop setting gives citizens a way to learn about their watershed and a forum to discuss common interests and sources of conflict. In addition to the immediate educational value, most of the 14 workshops held in Montana have resulted in the formation of a watershed group that actively plays a role in determining management priorities and options in each watershed.

In addition to the program for adults ranging from landowners to watershed groups, Montana Watercourse also runs a program designed to educate our stewards of tomorrow. This WET (Water Education for Teachers) program provides K-12 and teacher education so Montana's youth have a strong foundation of water knowledge. The Montana WET Coordinator delivers WET and other water education curricula and promotes water resources education to teachers through workshops, water festivals, and watershed tours (week-long, graduate-level courses on rivers like the Clark Fork, Blackfoot, and Upper Yellowstone).

(Continued on next page)

WATERCOURSE HIRES NEW DIRECTOR

Karen Filipovich was recently hired as the Director of the Montana Watercourse located in Bozeman on the MSU campus. As a Montanan, she came to an early appreciation of the importance of natural resources. As an undergraduate at Willamette, she studied Biology and Political Science because she really liked both plants and people. After a return to Montana, including a stint with Montana Conservation Corps, she completed a Master's degree in Public Policy, specializing in environmental and natural resources policy, from Harvard University. After graduating, she continued to work at the university, researching and writing on a range of national and international energy, environment, and natural resources issues. When not working on water resource education, Karen likes to spend as much time on the water, in the mountains, and otherwise enjoying Montana's outdoors.

Karen Filipovich

The Montana Watercourse is the only statewide educational program focused on providing education, information and support to both youth and adults on water resource issues. Giving all water users the information they need to make wise decisions and participate in water resource decisions that affect their lives is the goal. For adults, help and support designed to provide information that can be used as a basis for immediate action or in the process of decision-making is stressed. For youth, the program works with teachers to train them in activities and to provide tools that can be used to teach students the water knowledge necessary for future stewardship. Water is probably the single most important resource issue facing Montana in this century. Montana Watercourse will continue working in partnership with other agency professionals, private organizations, local governments, schools, and citizens to ensure good stewardship of Montana's waters for this and future generations.

(Watercourse continued from page 6)

The program is loosely affiliated with four other programs under the umbrella of "The Watercourse Center" in Bozeman, and a fifth associated program is based in Colorado. The Bozeman-based programs are listed below.

- Project Archeology develops an archeology-related curriculum for grades 3-12.
- Healthy Water, Healthy People provides water quality testing kits for grades K-12.
- Native Waters promotes respect for tribal water resources through the establishment of community- and reservation-based water and youth leadership programs.
- Project WET (Water Education for Teachers) an international water education program headquartered in Bozeman. It develops curricula and other teaching materials aimed at K-12 students. These materials are delivered to teachers through a network of state WET coordinators, who develop state-specific water education programs.
- The Montana Watercourse develops and provides water-related education to the general public; youth and adults are served equally. It is the only Watercourse Center program that focuses exclusively on Montana, and it the only program that offers services to adults and youth.

The Montana Watercourse is always seeking new opportunities to collaborate with natural resource experts to identify and meet water resource education needs. It is looking for ways to work together effectively and efficiently to ensure that all water users have the information and tools they need to act as responsible stewards of our waters.

To learn more about the Montana Watercourse, or to discuss an idea for a cooperative project, call 406-994-6671, or visit the website at www.mtwatercourse.org.

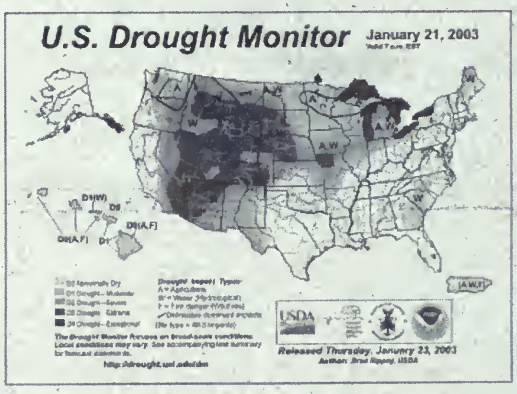
LINGERING EFFECTS OF MONTANA'S DROUGHT CAUSE FOR CONCERN

By Jesse Aber, DNRC

Depleted groundwater aquifers, lagging soil moisture, and low streamflow across much of the state prevented the Governor's Drought Advisory Committee from declaring the current three-year cycle of drought over at its October 24, 2002 meeting at the Capitol in Helena. Added to reports of lingering drought impacts and deepening drought in some areas of the state was a report by the National Weather Service that a moderate El Nino climate event, unfolding in the eastern Pacific Ocean may bring warmer and drier conditions to Montana this winter. The weather service noted that the recent water year, the period of October 1, 2001, through September 30, 2002, was the 63rd warmest and 24th driest of the 107-year period of record.

The north central region received above normal precipitation at high elevations, along the Rocky Mountain Front, beginning in early March with mountain snowpack accumulating as late as early July in Glacier Park. Two storms dumped upwards of 12 feet of snow near East Glacier on June 7 and 8, and a moist system centered near the international boundary and north Toole, Liberty, Hill, and Glacier Counties produced from 4 to 8 inches of rain with Pincher Creek, Alberta receiving 12 inches! Swollen rivers filled depleted reservoirs, such as Fresno Reservoir on the Milk River, in just a few days.

Valley locations in the north central and central regions continued to receive regular precipitation throughout early summer, but the committee was told that long-term deficits in soil moisture would need as much as two years of average to above average precipitation to recover from the current drought cycle. After several years of extreme drought and up to five years of precipitation deficits, the soil profile was unable to take up moisture at the rate it was received, and subsoil moisture deficits persisted. Much of the spring and early summer rains came in large amounts over very short periods, causing it to run off to low areas before it had time to soak into the subsoil layers. Although it could not fully address the lingering subsoil moisture deficit, the runoff filled hundreds of parched stock water ponds and small reservoirs. Stockmen had moved or liquidated up to 200,000 head of cattle in 2000 and 2001 for want of water and forage, so the replenishing of small reservoirs was a relief to many.



The northwest region had accumulated a near average mountain snowpack over the course of the winter as storms off the Pacific Ocean worked inland to areas west of the Continental Divide in January and February. By spring, as rain fell on the mountain snowpack day after day, reservoir operators had to work hard to keep storage space available for a sudden and large runoff event. Although localized flooding occurred along the lower Clark Fork River and small streams and creeks, relatively little damage occurred.

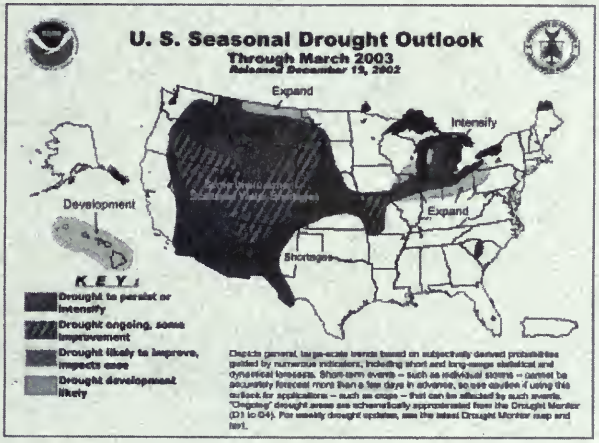
The weather service presented the committee with graphs indicating current cumulative precipitation deficits amounting to over 20 inches, dating to 1994 and 1996, at such geographically dispersed locations as Whitefish, Fort Benton, and Wyola. In contrast, stations at Terry, Ingomar, and Superior indicate current precipitation totals for the same periods of 10 inches or more above average, illustrating significant disparities within climate divisions.

A number of locations in the southeast and southwest climate regions ended the water year below 70 percent of normal. Across the state's entire southern

(Continued on next page)

(Drought continued from page 8)

tier, precipitation shortfalls dating to the mid-nineties, compounded by severe drought conditions in 2000 and 2001, were followed by another winter of below average mountain snowpack in the headwaters of the Missouri and Yellowstone rivers. According to the U.S. Geological Survey, record low flows were recorded for the second consecutive summer on tributaries of the lower Yellowstone River that flow north from Wyoming, where drought conditions were extreme this year. In southwest Montana, Lima and Lakeview finished the water year with 64 percent and 68 percent of normal precipitation, according to the weather service. Nearby Clark Canyon Reservoir continues to languish at a paltry 16,900 acre-feet of water as of October 1, compared with 128,500 acre-feet October 1, 1999, when it last had average contents.



In August, limited and spotty relief was seen from blistering summer temperatures and low precipitation in southeast Montana, with the arrival of tropical monsoon moisture tracking north from the Gulf of California. But it was not enough to make a difference at Yellowtail Reservoir on the Bighorn River where, according to the U.S. Bureau of Reclamation, contents are only 60 percent of average at 635,000 acre-feet, compared with 1,053,200 acre-feet on October 1, 1999, when it last held average contents. Recreation at Yellowtail Reservoir ground to a halt this summer when boat ramps were left high above the falling lake level, down more than 40 feet in elevation according to Reclamation. Billings ended the water year with only 63 percent of average precipitation, over five inches short of normal.

Northwest Montana, where a normal mountain snowpack last winter supported average streamflow this summer following drought conditions in 2000-2001, saw moisture conditions slip by July and August and into the fall. The November 19 Drought Monitor map shows that parts of northern Idaho, eastern Washington, and western Montana are classified as "Moderate" to "Severe," indicating the recent absence of moisture from the Pacific Ocean in the area. Parts of the northeastern area of the state also saw a drying trend by late summer, although the drought had not been as severe over the past two years there as elsewhere in the state.

The committee had indicated marked improvement in the drought status of a number of counties over the course of the summer, downgrading many from the "Severe Drought" to "Drought Alert" status, which is the lesser in severity of the two levels identified in the state's drought plan. However, improvement in moisture and water supply in most regions stalled as moisture fell below average in late summer and early fall. With the weather service reporting a good likelihood of a "mild" El Nino event this winter, the committee decided to classify the conditions statewide as "Continuing Drought." El Nino events are likely to produce warmer temperatures and drier conditions for Montana, especially at low elevations. However, it is not uncommon to see an average mountain snowpack during El Nino, according to the weather service.

Since the October meeting, National Weather Service month-end data for October and November confirm the classification decision of the committee. Only the north-central and northeast regions were even close to normal for October, receiving 80 and 79 percent of normal precipitation, respectively. West of the Continental Divide, moisture conditions continued slipping, with a mere 18 percent of average for the month. Kalispell received only 8 percent, and Missoula 24 percent of average October precipitation. Valley locations typically receive about an inch of precipitation during the month of October.

(Continued on back page)

(Drought continued from page 9)

The central region averaged about 75 percent, and the southcentral 66 percent, for October precipitation. The southwest and southeast climate regions saw little, if any, improvement in relentless drought conditions, with only 28 percent and 30 percent of average precipitation for October. Bozeman closed out the first month of the new water year with only 9 percent of average precipitation. In the southeast region, Baker received a modest 22 percent of average and Miles City 41 percent of average precipitation, according to the weather service. Through November 22nd, the weather service reports that dryness continues west of the Divide, with Butte at 7 percent, Missoula 15 percent, and Kalispell at 66 percent of average November precipitation. Southwest Montana continues its dry trend of early fall with Ennis and Helena receiving only 2 percent and 5 percent, respectively, of normal thus far in November. Other locations in the southwest average only about 25 percent so far in November. Central region locations are almost all below 10 percent of average for November with the exception of a few locations in the northern edge of the division. It seems as though El Nino is already having its impact on moisture received at valley locations across much of the state.

The drought committee will be closely monitoring the mountain snowpack in coming weeks, hoping to see the accumulation stay on track with the 30-year average.

Records of the U.S. Natural Resources Conservation Service's Snow Survey indicate that, on average, about 50 percent of the state's mountain snowpack should be in place by mid-January and about 70 percent by mid-February, providing water resource planners with a good indication of the seasonal water supply. The committee is planning to meet again in February to assess and report the water supply outlook for 2003.

The committee is requesting public comment regarding the state's drought program. The committee's Drought Monitoring Internet site can be found at: http://nris.state.mt.us/drought

Comment can be sent to the committee's staff at: jaber@state.mt.us , or call Mr. Jess Aber at (406) 444-6628.

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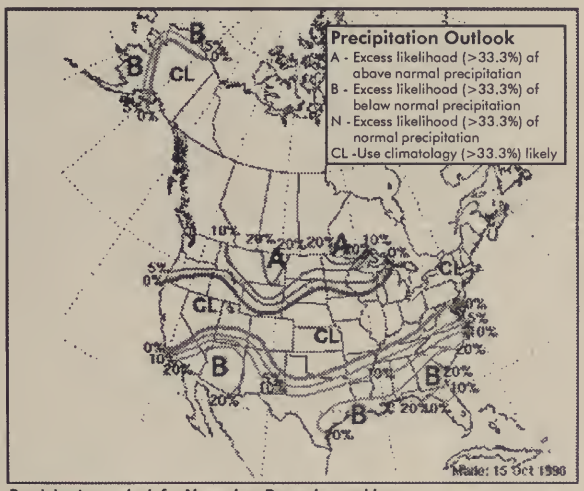
WHAT THIS WINTER MAY BRING

by Jesse Aber

IF YOU'RE WONDERING WHEN WE'LL GET THE NEXT WEEKEND OF WARM WEATHER SO YOU CAN FINISH THE LAST OF YOUR OUTDOOR PAINTING, YOU MAY CONSIDER TAKING THE RIGHT WEEKDAY OFF WORK TO GET IT DONE. For most folks, the season change is welcome, since there were 28 daytime highs over the 90-degree mark this summer for Helena, with four of the eight 90-degree days of September setting all-time records. June and July's timely moisture had trailed off, along with the stock market, making way for falling streamflows and a busy fire season. Precipitation for Helena is 1-1/2 inches below average for August and September combined and is less than one-tenth of an inch for October going into the last week of the month. Somehow, Montana's spring wheat crop ended the season as one of its best.

So, will 1998's El Niño give way to a "normal year," or is there another climate anomaly underway? Climatologists at the National Climate Prediction Center (CPC) claim with a **high** degree of confidence that a La Niña, or "cold" event, is brewing along the equator off the west coast of South America, the same place where climate's other wayward child, El Niño, is born. The same Pacific waters that were overheating in early 1997 are now becoming cooler than normal as the easterly trade winds, noticeably absent for most of 1998, are once again turning the ocean waters over, resuming the upwelling of deeper, cold currents. Cold sea-surface water temperatures are believed to be the driving force behind La Niña, just as abnormally high sea-surface water temperatures are a precursor for El Niño.

Like El Niño, La Niña conditions are more predictable for Montana in winter than in summer. However, a La Niña event is dynamic during winter when compared to an El Niño, which is relatively static during winter months. During an El Niño, the jet stream splits into northern and southern branches, leaving Montana in the inactive zone between the branches. In contrast, La Niña's jet stream typically snakes north and south across the state, acting as an agent for continual change. During El Niño events, Montana has warmer and drier winters, and the southwest United States has colder and wetter winters. During La Niña winters, the northwest and northern Great Plains tend to get more of what is normally expected — colder temperatures and more precipitation than usual, and the southwest and southern Great Plains are warmer and drier than normal.



Precipitation outlook for November, December and January

Both "cold" and "warm" events rarely begin to take effect before winter, so don't be surprised if we have a pleasant fall. La Niña typically has its greatest impacts during the period of January through March.

(Continued on page 5)

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION — WATER RESOURCES DIVISION
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http://www.dnrc.mt.gov/wrd/home.htm

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WATER RIGHTS BUREAU NEW APPROPRIATION PROGRAM

by Rita Nason

THE WATER RIGHTS BUREAU IS ONE OF FOUR BUREAUS WITHIN THE WATER RESOURCES DIVISION. Its mission is to ensure the orderly appropriation and beneficial use of Montana's waters. The bureau's sixteen employees work to accomplish this mission through involvement in two programs: the Adjudication Program and the New Appropriations Program.

The New Appropriations Program administers and regulates post-1973 appropriations of water. The primary functions of this program are to (1) set policy and guidelines to determine whether applicants for new permits have met all statutory criteria for permit issuance, (2) provide guidelines on public notice of new applications and mitigation of any objections filed against applications, and (3) provide assistance to the eight Water Resources Regional offices.

On August 24, 1998, Shaunda Hildebrand was hired to the position of new appropriations program manager. Shaunda brings enthusiasm and experience to the Water Rights Bureau. For the past nine years, Shaunda has worked for three conservation districts and was involved in several watershed planning groups, the Superfund site and ARCO in Anaconda, and the Governor's Upper Yellowstone River Task Force. Shaunda not only enjoys working with landowners and water issues, but finds it challenging and rewarding. The bulk of her experience in water-related issues has been through local watershed activities, working with farmers and ranchers, and administering the Natural Streambed and Land Preservation Act of 1975.

If you have any questions, you can contact Shaunda at: (406)444-6618 shildebrand@state.mt.us

MILK RIVER BASIN "KNOW YOUR WATERSHED" VIDEO

by Kraig VanVoast

AS PART OF THE PREPARATIONS FOR A JANUARY 1999 "KNOW YOUR WATERSHED" WORKSHOP FOR THE MILK RIVER BASIN OR WATERSHED, AN EDUCATIONAL VIDEO FOR YOUTH AND ADULT RESIDENTS OF THE BASIN IS CURRENTLY BEING CREATED. During June, a Montana State University (MSU) video production crew spent nine days taping footage along the Milk River in Montana, Saskatchewan, and Alberta. Presently, members of a Milk River Watershed Video subcommittee are collaborating with the MSU video crew to produce Phase One of a two-part video project. This first film is designed to be a 15-25 minute "tour" of this very large watershed.

Photo by Mike Daily

A film crew shooting video for the Milk River Video on Signal Butte south of the confluence of the Milk and Missouri Rivers.

Phase Two of the project calls for integrating the substantive information provided at the January 1999 "Know Your Watershed" workshop into Phase One's video "tour" to create a longer, more educational video that addresses the priority needs identified by a committee of 39 interested residents of the Milk River watershed. Planners envision adding 45-65 minutes of video for a completed product of 60-90 minutes (including Phases One and Two.)

The purpose of the project is to increase awareness, knowledge, and understanding of the watershed, its diverse users, and the complex, international management regime. There are two primary project goals:

- To provide an overview of the Milk River basin to substitute for a "walk" through the watershed
- To create a stand-alone educational video for long-term use with various audiences, especially residents of the Milk River watershed

The U.S. Bureau of Reclamation and the Department of Natural Resources and Conservation have provided initial funding for the project, along local sponsors including Walleyes Unlimited, North-Central Stockgrower's Association, and Glasgow Irrigation District. For more information contact:

Mary Ellen Wolfe
Montana Watercourse, MSU
(406) 994-1910
mwolfe@montana.edu

DEADMAN'S BASIN CABIN SITE AREA SOLD

by Allan Kuser and Tim Kuehn

On July 13, 1998, the State Water Projects Bureau sold an 82-acre tract of property near Deadman's Basin Reservoir to the Basin Cabin Owners Association.

The reservoir, located in Wheatland County, was completed in 1941 with the primary purpose to provide irrigation water, but it does offer recreational opportunities to the public. Soon after completion of the reservoir, individuals were establishing unauthorized camp- sites along the southeast shore. In 1963, the State Water Conservation Board (SWCB) entered into a 30-year lease with the Department of Fish, Wildlife and Parks (DFWP) to develop recreational facilities at the reservoir. During this period, DFWP developed the cabinsite area into 47 lots that were subleased to members of the public. In 1995, DFWP terminated the cabinsite lease with the Department of Natural Resources and Conservation (DNRC), successor in interest to the SWCB, but retained a lease on the Fishing Access Site (FAS) at the reservoir.

Deadman's Basin Reservoir cabinsite area. *File Photo*

DNRC felt, due to its limited ability to increase lease revenue and lack of personnel to manage the leases, that the leases did not justify the responsibility of administering the cabinsites. In addition, the cabinsite area provided no public benefit to anyone other than the lessees. Negotiations between DNRC and the lessees were conducted to define the terms of sale. Issues surrounding the sale included protecting the Deadman's Basin Water Users Association's control of reservoir operations, determining fair market value and sale of public land. Additionally, subdivision requirements, including septic and water well spacing, were discussed with the Department of Environmental Quality.

An environmental assessment was made available to the public for review and comment. After finding no significant impacts, DNRC sold the property to the cabin owners's association for the appraised value of $78,000. The funds were deposited in the Resource Indemnity Trust account.

To ensure minimal future impacts, the cabinsite area is restricted with the following conditions: (1) the property is owned by the Association and not individuals, (2) the area cannot be further divided into more sites, (3) there will be no commercial development on the property, (4) a flood easement was reserved to allow operation of the reservoir during flooding conditions, and (5) a public road easement provides public access to DNRC land beyond the cabinsite area. If any of the restrictions are violated, the property could revert back to DNRC.

The FAS and all unrestricted DNRC property at the Deadman's Basin Reservoir remain open for public recreation. DFWP has made significant improvements at the site including road grading, new vault toilets and a new boat access.

WATER ON THE WEB

by Brent Winters

The Water Resources Division announces the availability of division-related information and data on the World Wide Web (Web). The web address for the division is:
http://www.dnrc.mt.gov/wrd/home.htm

Several locations on the web offer information and data regarding water and water-related issues. The four bureaus which comprise the division — Water Rights, Water Operations, Water Management, and Water Projects — are making an effort to make information and data available to the public. In addition to the information provided in the web site, the division offers a considerable amount of text-based information via its file transfer protocol (ftp) site located at:
ftp://flathead.dnrc.mt.us/water

Recognizing the value of the Internet and the web as an information dissemination tool, the division has implemented a public internet access program in seven of its regional offices (Billings, Bozeman, Glasgow, Havre, Kalispell, Lewistown, and Missoula,) as well as the Helena Regional Office. Personal computers have been placed in public records rooms to provide the public with an opportunity to access division information and data on the Web. The division hopes this program will enhance and improve the general public's accessibility to division information and data. The web site is continuously evolving, so stay tuned for further developments.

The Montana Department of Natural Resources and Conservation

WATER Resources Division

"To provide the most benefit, through the best use, of the state's water resources for the people of Montana."

RICHARD OPPER AND THE MISSOURI RIVER BASIN ASSOCIATION

RICHARD OPPER HAS SPENT THE PAST 25 YEARS WORKING IN THE NATURAL RESOURCES FIELD. He grew up in Oklahoma and completed his undergraduate work at Oklahoma State University. The day after graduation, he traded up by moving to Montana, where he received his M.S. in Environmental Sciences in the late 1970s from Montana State University.

After graduation, he worked as a natural resource consultant for a Billings-based engineering firm. During the mid-1980s, Mr. Opper spent several years in New Mexico, where he worked on public lands grazing policies and served as a natural resource planner for ranchers, environmental organizations, and government resource agencies. There, he helped found a nonprofit organization to help resource managers overcome the loss of lands to erosion, overgrazing, and general declines in productivity. Opper worked with Allan Savory, a man regionally known for his brilliant ecological and eccentric approaches to land management. Opper also worked as a resource manager for a coalition of New Mexico's Indian Pueblos.

In the late 1980s, Mr. Opper returned to Montana to serve as the executive director of the Missoula-based Northern Lights Institute, a nonprofit organization that focuses on resolving natural resource management disputes in the western United States. In July 1990, Mr. Opper was hired as the executive director of the Missouri River Basin Association (MRBA), a job he continues to hold.

MRBA is a coalition of states and Indian tribes in the Missouri River basin. Eight states — Montana, Wyoming, North Dakota, South Dakota, Iowa, Kansas, Nebraska, and Missouri — are represented on MRBA's governing board. The governor of each state appoints a person from that state to serve on MRBA's Board of Directors. Representing Montana is Mr. Bud Clinch, the director of the Montana Department of Natural Resources and Conservation. Mr. Clinch is also currently serving as the president of MRBA's board and is helping guide the association through some of its most productive years. The 28 tribes scattered throughout the Missouri River basin are represented on MRBA's board through Mr. Richard Bad Moccasin, the executive director of the Mni Sose Tribal Water Rights Coalition.

In 1995, the U.S. Corps of Engineers published its "Preferred Alternative" to the *Missouri River Master Manual*. The master manual is the document that guides the Corps' management of the river through major events like floods and droughts. Following the drought in the late 1980s, which saw precipitous drops in the Missouri River's mainstem reservoirs like Fort Peck, the Corps undertook its first major revision of the master manual in 30 years. The proposed new operating plan published by the Corps met with widespread disapproval. In an effort to develop a plan more acceptable to the basin's states and tribes, the Corps asked MRBA to develop elements of a river operating plan that people in the basin could live with.

Since then, the association has been working on a two-phased planning process. The first phase looked at everything except flows, the one issue that has always divided the basin's states. The planning process involved two basin-wide conferences and numerous meetings with small groups of navigators, recreators, fish and wildlife proponents, and other river users. Phase 1 culminated with the publication of MRBA's *Missouri River Planning Recommendations* last April. The document lists a variety of recommendations designed to improve the overall economic and environmental conditions in the basin. It has been met with approval

Richard Opper

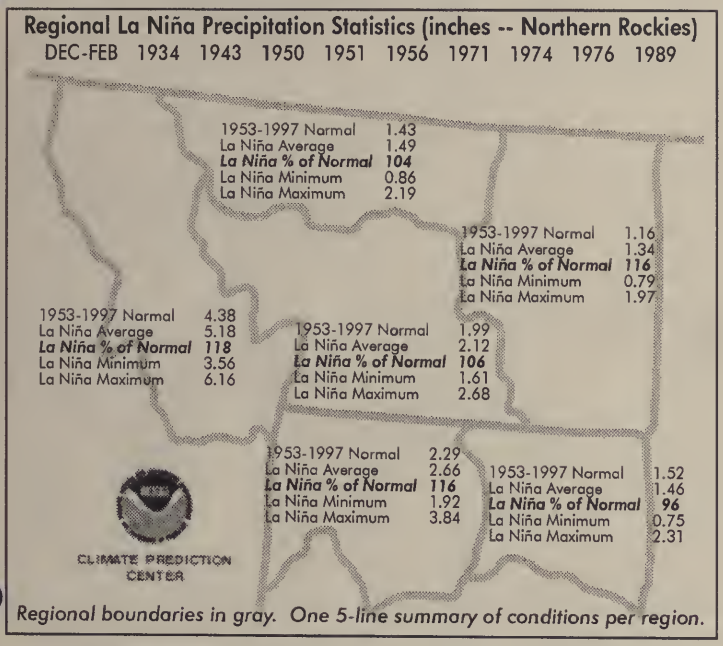
by the basin's states, federal management agencies, and Congress, which has already implemented several of its suggestions. Copies of the document are available through the MRBA office at P.O. Box 301, Lewistown, MT 59457, (406) 538-4469.

The association has now begun to turn its attention to the difficult and divisive issue of river flows. The Corps recently published a range of eight alternatives for managing the Missouri River. Some of those alternatives emphasize environmental concerns, while some focus on conserving water during a drought. MRBA will be holding a basin-wide conference in Kansas City on December 14-15 to focus on some of these critical flow issues. The goal is to develop a water flow plan that will help recover the basin's threatened and endangered fish and bird species, while not causing undue harm to existing uses of the river.

The Corps of Engineers has been very supportive of the association's collaborative planning efforts. With its support, and the efforts of water users throughout the basin, perhaps we can resolve the issues that have long divided the basin's constituents — just in time for the anniversary of Lewis and Clark's celebrated journey up our beloved and hard working river.

WHAT THIS WINTER MAY BRING

(Continued from page 1)



Regional boundaries in gray. One 5-line summary of conditions per region.

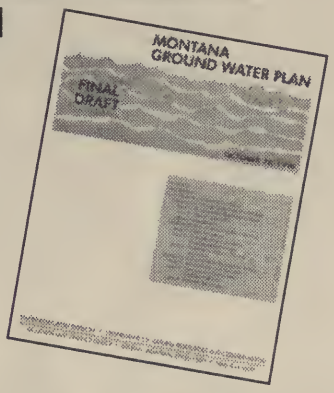
Temperatures should fluctuate like most winters, but cold spells may last longer and may be colder. January, February, and March are likely to be snowier than usual, particularly in the western half of the state, where mountain ranges cause the western flow of moisture to rise and then fall in the form of snow. Our last official La Niña was the winter of 1988-89, which was colder than average from January through March.

Accordingly, the CPC's 90-day precipitation forecast for November through January shows the center of the anomaly directly over Montana, ranging from 5 to 20 percent above average. Temperatures for the same period will be average except for northeastern Montana, which will be about 5 percent colder than average.

I'm anxious to see whether the CPC can predict this winter's weather as well as it did the El Niño event of 1997-98. Skiers, it could be another big powder year, and a good water year for everyone.

MONTANA'S GROUND WATER PLAN

by Jim Robinson



THE PUBLIC COMMENT PERIOD ON THE DRAFT MONTANA GROUND WATER PLAN IS OPEN AND WILL CONTINUE UNTIL DECEMBER 24, 1998. The draft plan was developed in response to concerns identified by citizens at public scoping meetings and as a result of a recommendation of the *1992 State Water Plan Section: Integrated Water Quality and Quantity Management.*

Initial work on the draft plan began in 1992. A newly formed Ground Water Work Group resumed work on the plan in 1998 by building on the information collected by the original planning committee. Comments on the draft plan were again solicited from members of the public, special interest groups, and agency specialists through targeted mailings. Public meetings were held in major cities around the state. Finally, a series of collaborative editing sessions were held by the Ground Water Work Group to develop consensus language for the draft plan's recommendations and implementation provisions.

As part of the formal adoption process, the department has scheduled public hearings to receive comment on the draft plan at the following dates and locations:

- December 10, 1998
  7:00 p.m. to 9:00 p.m.
  Missoula Public Library
  301 East Main, Missoula
- December 16, 1998
  7:00 p.m. to 9:00 p.m.
  DNRC Bannock Conference Room
  1625 Eleventh Avenue, Helena
- December 17, 1998
  7:00 p.m. to 9:00 p.m.
  Parmly-Billings Public Library
  510 North Broadway, Billings

Interested parties are encouraged to comment on the draft plan either orally at the public hearings or in writing. Comments must be received by December 24, 1998. To submit comments or request copies of the draft plan, please contact Jim Robinson, DNRC, P.O. Box 201601, Helena, MT 59620-1601; telephone (406) 444-4247; or e-mail **jrobinson@mt.gov**. Also, the draft dlan can be accessed through the DNRC web site at:
http://www.dnrc.mt.gov/wrd/gw_plan.htm

MONTANA'S STATEWIDE ADJUDICATION

by Rita Nason

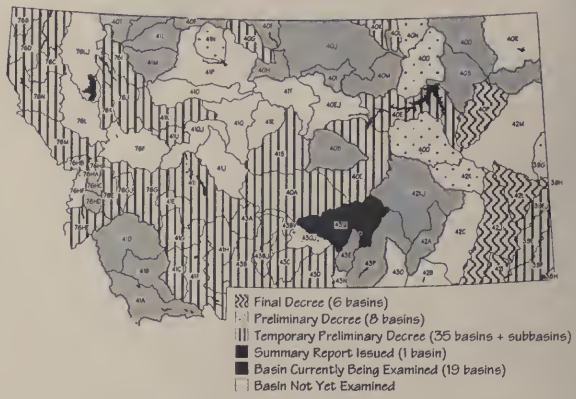
THE WATER RESOURCES DIVISION IS WORKING WITH THE MONTANA WATER COURT TO SPEED UP THE ADJUDICATION PROCESS. Since 1992, six basins have been decreed, at a rate of one decree per year. The division and the water court are determined to pick up the pace of adjudication by committing additional employees and time to the effort.

On September 22, 1998, DNRC issued its *Summary Report for Basin 43Q* to the Montana Water Court. The water court has completed its review of the report, and issuance of a Basin 43Q decree should occur within the next few months.

Currently, claim examination is complete in eight basins and decree preparation could begin. Those basins are: 40F, 40H, 40I, 40J, 40M, 40Q, 40S and 40T.

Judy Jeniker, water resource specialist in the Kalispell Regional Office, has begun preparing DNRC's *Summary Report to the Water Court for Basin 40Q*. For the past seven years, Judy has primarily worked in the New Appropriations Program, but is very familiar with the Adjudication Program. From November 1983 to November 1991, Judy was the Adjudication Specialist in the Kalispell office and has experience in claims examination and summary report preparation. Judy anticipates that DNRC's *Summary Report for Basin 40Q* will be ready to present to the water court in February 1999.

Status as of October, 1998



In addition to Judy's work in Basin 40Q, efforts to prepare DNRC's *Summary Report for Basin 40S* are also underway. Rita Nason, adjudication program coordinator, and Bob Arrington, adjudication program advisor, are devoting time to this project and anticipate completion of the report by March 1999.

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NEWS FROM THE WATER RESOURCES DIVISION
OF THE MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

DEPARTMENT NEWS

MONTANA LEGISLATURE ACTS ON WATER ISSUES

THE 56TH SESSION OF THE MONTANA LEGISLATURE CAME TO A CLOSE ON WEDNESDAY, APRIL 21, 1999. FOLLOWING ARE SOME OF THE BILLS RELATING TO WATER ISSUES THAT LEGISLATORS PASSED THIS SESSION.

• **HB 51** - Changing a Meeting Date Requirement and the Report Deadline for the Drought Advisory Committee. The Drought Advisory Committee meets annually to assess moisture conditions and, when appropriate, begins preparing for drought mitigation. The committee has felt that the existing statutory deadlines for these actions were too early in the year. The bill moved the spring meeting from the middle of February to the middle of March and moved the reporting deadline from March 15 to April 15. The Drought Advisory Committee sees these changes as allowing them to better consider last winter's snowpack on the potential for drought. These changes do not prevent the advisory committee, however, from taking earlier action in those years when it is warranted.

• **HB 66** - Estimated Processing Time Listed on Applications for Permits and Licenses.

• **Water Rights**—HB 66 requires state agencies to include, on the application form, the estimated time it will take for the agency to process and act on a correctly completed application. The Water Rights Bureau will be placing the estimated time, based on statutory time frames, on the application forms for Provisional Permit for Completed Stockwater Pit or Reservoir (Form 605), Beneficial Water Use Permit (Form 600), and Authorization to Change (Form 606). Form 605 will have an estimated time of 30 days for processing and acting on a correct and complete application, and Forms 600 and 606 will have an estimated time of 210 days.

• **Dam Safety** — The Dam Safety section will be modifying safety application forms for permitting, operation, and construction of high hazard dams as well as water well licensing forms.

• **HB 95** - A General Revision of the Montana Water Use Act of 1973. The Montana Water Use Act of 1973 established the water right permitting system. The following is a list of changes to the Montana Water Use Act enacted by HB 95.

• Objectors will be notified of defects in an objection. The objector has 15 days from notification of deficiency to make the objection correct and complete. If not, the objector cannot be a party, and the objection will be terminated. This also clarifies what constitutes a valid objection: (1) the objector has standing, (2) has filed a correct and complete objection within the prescribed time period, and (3) has stated the applicable information as required in the statute.

• Applicant notifications are no longer required to be sent by certified mail. Applicants who have submitted applications which are not correct or complete will be notified by the department of the

(Continued on page 2)

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http://www.dnrc.mt.gov/wrd/home.htm

(Continued from page 1)

deficiency. Applications must be corrected and complete within 30 days of notification of deficiency to keep the date the application was submitted as the priority date. If the application is corrected and complete 31 to 90 days from the date of notification of deficiency, the priority date is changed to the date the application is corrected and complete. All applications not correct and complete within 90 days after notification of deficiency will be terminated.

• **HB 429** - Temporarily Closing Subbasins of the Bitterroot River Basin to New Appropriations. The bill closes surface water sources in the basin to new appropriations of water.

Like most other basin closures, to this water right closure includes the following exceptions. It does not limit groundwater developments. Surface water appropriations are allowed only for municipal water supply, temporary emergency appropriations, and use of water through new or enhanced storage projects with a capacity of 50-acre feet or more.

This surface water closure is temporary. The closure's termination is tied to the Water Court's development of an enforceable decree for the Bitterroot or its subbasin watersheds. Once such a decree is completed, basin residents will have two years to evaluate the effects and purpose of the water right closure. The bill's supporters felt that this time period was needed to allow basin residents an opportunity to determine whether they wish to end the closure or to pursue other administrative or legislative options.

• **SB 9** - Removal of Legislative Affirmation of Large-Scale Water Right Changes. SB 9 removes the need for the legislature to affirm the department's decision on in-state change applications involving 4,000 acre-feet of water a year, 5.5 cubic feet per second, or more to in-state use. This allows the department to process large-scale changes the same as other changes, thus easing timing concerns of the applicant.

• **SB 29** - Removing Obsolete Statutory Directives and Procedures Related to Canal Projects Owned by the Department. This bill amended Section 85-1-211, MCA which stated that certain state water projects should be transferred by June 30, 1995. All of the listed projects have been transferred. This section was amended to reflect the transfer of these projects, and the existing disposition language for project transfer in general was modified.

• **SB 40** - Removing the Department's Power Sale Restrictions for Power Generated by a State Facility. This bill amended Section 85-1-509(3), MCA. It stated that the department may not sell power generated at a facility except to a public utility, a rural electric cooperative, or a federal power marketing agency organized in Montana and selling power to Montana customers. This restriction was deleted. The Department can now sell power generated at its Broadwater facility near Toston to any potential buyer.

• **SB 44** - Extending the Allowed Lease Term for State Water Projects Lands Leased to the Department of Fish, Wildlife and Parks for Public Recreational Use; Deleting an Expired Provision of the Cabin Site Leasing Law; Amending Section 85-1-802(2), MCA; Which Stated that All Leases with the Department Will Have a Term of Ten Years. This bill allows the term of Department of Fish, Wildlife and Parks' campground leases to be extended from 10 years to a maximum of 30 years. Section 85-1-802(3), MCA, which stated that all cabin site leases issued prior to July 1, 1994, expire March 31, 1996, was deleted.

• **SB 98** - Extending for 10 Years the Term of Instream Flow Leasing Program. The Montana Department of Fish, Wildlife and Parks Instream Flow Leasing Program was set to expire in 1999, and SB 98 has extended the program to June 30, 2009. SB 98 also increased the number of stream reaches that the department could designate where water leasing may occur.

• **SB 371** - Landowner Notification of Proposed Development and Appropriation of Groundwater. A person who does not have possessory interest in the real property from which groundwater (less than 35 gallons per minute) may be appropriated must notify the owner of the property, in writing, of the intent to appropriate. The notification must be sent at least 30 days prior to constructing or appropriating. Proof of the notification must be provided to DNRC with a correct and complete Notice of Completion of Groundwater Development (Form 602) before a certificate can be issued.

• **SB 468** - Temporarily Closing Clark Fork Basin to New Consumptive Surface Water Appropriations. This bill created a temporary, two-year closure to the issuance of water use permits in the Clark Fork/Flathead River basin. During this time period, Avista (formally Washington Water Power) has agreed not to call water right holders that are junior to its hydropower water rights and will negotiate with the State of Montana the issue of providing some level of permanent protection to the junior water right holders. Avista owns the largest and potentially controlling water rights in the basin. These are at Cabinet Gorge and Noxon Rapids Dams. Both of the dams are located on the lower portion of the Clark Fork mainstem near the Idaho and Montana state line. This closure terminates on February 28, 2001.

(Continued on page 3)

STATE WATER PROJECTS BUREAU REHABILITATES PETROLIA RESERVOIR AND TRANSFERS OWNERSHIP

By Tim Kuehn

ON FEBRUARY 25, 1999, THE DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION (DNRC) TRANSFERRED OWNERSHIP OF THE PETROLIA RESERVOIR PROJECT TO THE PETROLIA IRRIGATION DISTRICT. The project, located in Petroleum County, Montana, near the town of Winnett, was constructed in 1951 by the State Water Conservation Board (SWCB) to store water from Flatwillow Creek and provide irrigation water on approximately 2,300 acres of land. The Petrolia Water Users' Association entered into water purchase contracts with the SWCB and managed the daily operation of the project.

Photo by Craig DuBois

Water spilling over RCC Spillway, May 6, 1997.

In 1966, the SWCB entered into an agreement with the State Fish and Game Commission to expend Land and Water Conservation Funds (LWCF) to improve the recreational facilities at the project. The LWCF agreement required public recreational opportunities in perpetuity and necessitated ownership of the campground by a public entity under Montana law.

In the early 1990s, an inspection revealed that the spillway did not meet the criteria established by the Montana Dam Safety Program, and the project was in jeopardy of losing the required operation permit for a high hazard dam. In 1995, the Montana legislature provided funding to rehabilitate the dam contingent upon the water users accepting ownership of the project after rehabilitation. Funding for rehabilitating the spillway was approved in the amounts of a $1,076,000 grant from the State Special Revenue fund and a $358,000 loan with a twenty-year term from Conservation and Resource Development Bureau to the water users.

Construction of a new, baffled-apron-drop primary spillway with a roller-compacted concrete guard dike and an earthen auxiliary spillway was completed in 1996 under the direction of DNRC engineer Kurt Hafferman, assisted by regional office engineer Sterling Sundheim. The primary contractor was COP Construction, with MSE-HKM providing the engineering consulting services. Both firms are located in Billings, Montana. The project was rehabilitated under budget and ahead of schedule.

Negotiations between the department and the Petrolia Irrigation District took place during the rehabilitation and concluded with the signing of the Deed and Agreement to Transfer in February 1999. The former water users' association formed an irrigation district to enhance its revenue collection ability, become eligible to own the campground, and assume an existing federal Farm Service Agency revenue loan. An outstanding balance of approximately $550,200 will be repaid to the State of Montana in annual payments by the district. The Agreement to Transfer protects historical public access and recreational opportunities in perpetuity. Governor Marc Racicot applauded the cooperative efforts of the department and the district as "complex, but very worthwhile effort."

(Continued from page 2)

Essentially, the bill maintains the relative status of water use in the Clark Fork basin during the two-year negotiation process. In this instance, the Clark Fork basin is defined as the entire river drainage area within Montana above Noxon Rapids Dam including the Flathead River and all tributaries, the Bitterroot River, the Big Blackfoot River, and the entire Clark Fork River and all its tributaries. This bill recognizes the basin's existing legislative and administrative water right closures. All such closures take precedence over SB 468. The legislation exempts groundwater and surface water appropriations for domestic, stock, and municipal uses or for temporary emergency appropriations.

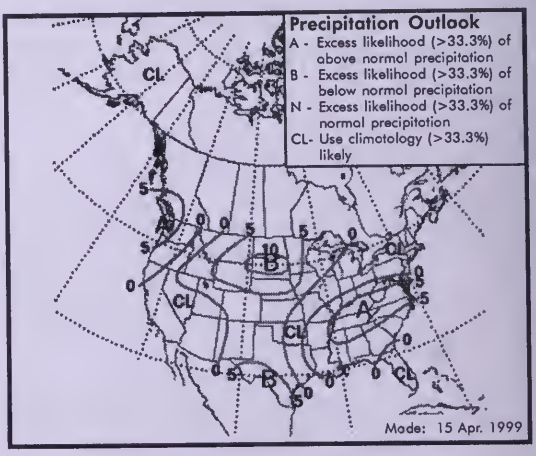
APRIL GOES OUT LIKE A LION

By Jesse Aber

THE GOVERNOR'S REPORT ON THE POTENTIAL FOR DROUGHT IN 1999 WAS RELEASED APRIL 23, FOLLOWING A TWO-DAY PRECIPITATION EVENT THAT BROUGHT SOME MUCH-NEEDED MOISTURE TO MONTANA'S VALLEYS AND PRAIRIES. The report had concluded that this year the potential for drought across Montana, through July, was low. After all, the experts had painted a bright outlook at the April 16 Drought Committee meeting, reporting that the mountains had received above average moisture, the reservoirs were in good shape, runoff to streams would be at least average, and soil moisture was average statewide, except for some dry pockets here and there, including Montana's Golden Triangle grain country.

While the mountain snowpack had soared, precipitation had been conspicuously absent from valleys and lower mountain elevations all winter. What little snow that had accumulated in the lower elevations melted in the 70-degree temperatures of the third week of March. February and March had been very dry in valleys on both sides of the divide. The grass fire season was well underway by the second week of April, and the Montana Agricultural Statistics Service's April 18 *Crop-Weather Report* showed all zeros in the "Precipitation - Past Week" column for all seven climate divisions of the state.

Since October 1, 1998, Conrad, Cut Bank, Chester, Great Falls, and Helena were hovering around 50 percent of normal precipitation. Six and one-half months had gone by with only about 2 inches of moisture for these towns. A windy and mild, open winter had depleted what soil moisture remained from summer 1998. Other places had been dry as well, including Red Lodge, Columbus, Belgrade, Missoula, Polson, Drummond, and Anaconda. This was April in Montana, when, according to the Montana Climate Atlas, "precipitation increases greatly east of the divide and in the valleys west of the divide." The atlas continues, "Drought years are notably linked with the failure of these early season storms."



Soil moisture figures continued to decline, and conversations with grain growers in parts of the Golden Triangle wheat region indicated that they were getting nervous. Now came the annual and sometimes agonizing wait for rain that generations of dryland farmers have endured in Montana since before the turn of the century. Just last year, the wheat emerged, only to wilt and die, or at best produce some meager kernels, before the rains arrived in June, which was, in many cases, too late. Now, it would take bigger weather systems with more energy and easterly upslope movement before the plains at the foot of the Front Range would get the precious moisture they so badly needed.

A moist system arrived from the south April 22, drenching Wyoming and providing Montana valley locations on both sides of the divide with some moisture. Hardin and Harlowton received .25 inch, Choteau and Conrad .333 inch, and some areas along the Front Range, like Valier, .40 inch. By April 23, Bozeman was at 1.68 inches for the month, and Roundup was close to 1.5 inches. For the period of April 1 - 22, the southeast was now at 213 percent of normal, with the southcentral, northeast, and central climate divisions almost or at normal levels of moisture. The area of Montana west of the divide, however, was only 28 percent of normal.

Finally, on April 28, another large dose of energized moisture streaked its way north from the Gulf of California. A light drizzle in Helena Wednesday morning developed into big, soft snowflakes by noon. Helenans awoke Thursday morning to five to eight inches of the wet, heavy stuff. Soon the reports rolled in from the National Weather Service: Billings .72 inch, Lewistown .69, Great Falls .32, Helena .25, Red Lodge 2.30 inches, Lima .58, Chester .30, Conrad .32, Choteau .31, Grassrange .75, Fort Benton .46, White Sulfur Springs .90, and on. The triangle is not yet out of the woods, but is looking much better.

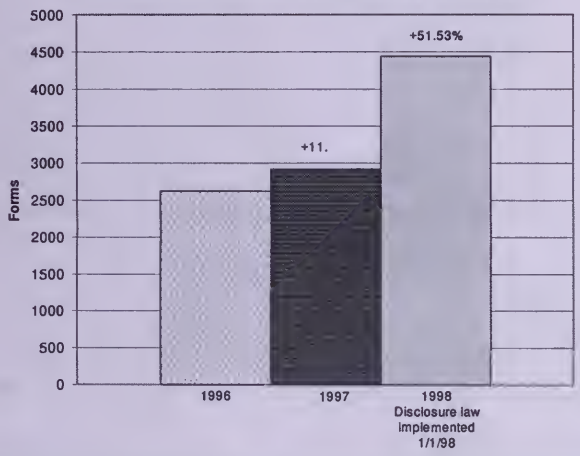
In Montana, it seems we're always on the edge of our seats until the first three-day soaker shows up. Friday night was sure to be a good night at many a rural corner watering hole across the heartland of our state. So, once again, if you don't find the weather to your likin' in Montana - why, just stick around a bit; it's sure to change. Oh, and don't forget - the probability for drought this season in Montana, at least through July, is low.

Note: *The Governor's Report on the Potential for Drought in Montana, 1999* can be found on the DNRC Internet home page at: **http://www.dnrc.mt.gov/**

WATER RIGHT OWNERSHIP UPDATES

THE 1997 LEGISLATURE PASSED HOUSE BILL 506, COMMONLY KNOWN AS THE WATER RIGHT DISCLOSURE BILL, AND IT BECAME EFFECTIVE JANUARY 1, 1998. This legislation was viewed as a modest step towards increasing compliance with the requirement to properly update DNRC's water right ownership records. Now that we have a full year's experience with this water right disclosure requirement, we want to report how it's going. The following graph displays the number of Ownership Update (transfer) forms we received statewide during each of the past three years and the percentage of increase over the previous year.

During 1996, the Water Rights Program received 2,626 transfer forms, compared to 4,438 in 1998. The first year HB 506 was in effect in 1998 and thus, that year was the first opportunity to feel its presence. The number of Ownership Update (transfer) forms received in 1998 shows an impressive increase over the previous year, and the trend seems to be continuing into 1999.



It appears that this legislation brought attention to the issue of updating water right ownership when property changes hands. We commend those associated industries (including the Land Title Association, various real estate groups and associations, and the Clerks and Recorders) for the educational efforts that were made in this area. What seemed like a modest proposal has had great results!

Although these figures are impressive, recent mailings have reminded us that we have a long way to go before we can rely on our data with confidence. However, every journey begins with one step.

Reminder:

When property changes hands, remember to update DNRC water right ownership records. Ownership update forms are the "pink" copy of the Realty Transfer Certificate (RTC) and are available at DNRC regional offices, title companies, and real estate offices.

NEW FLOOD MITIGATION ASSISTANCE PROGRAM

by Karl Christians

KARL CHRISTIANS, FLOODPLAIN MANAGEMENT PROGRAM MANAGER, IS ADMINISTERING A NEW FLOOD MITIGATION ASSISTANCE PROGRAM (FMAP). The Federal Emergency Management Agency allocates (1) approximately $100,000 annually to the DNRC for project grants to assist individuals in mitigating their residences from flooding, and (2) about $10,000 annually for planning grants. The FMAP funds are generated from a portion of flood insurance premiums under the National Flood Insurance Program.

Park County and Lincoln County, project sponsors, applied for and received grants to relocate or elevate structures from flooding. Park County elevated one structure and is flood-proofing another structure with a floodwall. Both structures had been previously flooded and have had approximately $20,000 worth of flood damage both in 1996 and 1997.

Lewis and Clark County and the DNRC Floodplain Program both applied for and received planning grants. Lewis and Clark County developed a countywide Flood Hazard Mitigation Plan, and the DNRC developed a *Guide and Workbook for Local Officials on How to Write a Flood Hazard Mitigation Plan.*

The FMAP will be an annual program, and the application deadline for the federal Fiscal Year 2000 will be the end of January. Feel free to contact Karl at 406-444-6654 for more information.

REP. HAL HARPER: LONG SERVICE TO MONTANA'S WATERS

REP. HAL HARPER WAS BORN IN NASHVILLE, TENNESSEE, BUT MOVED TO MONTANA WHEN HE WAS 4 YEARS OLD. He began attending Helena-area schools when he was in the sixth grade and later attended Rocky Mountain College in Billings and the University of Montana in Missoula, where he received a BA in Philosophy.

He entered the legislature in 1973 and, due to term limits, cannot seek re-election to the House next session. During his long tenure he chaired the House Natural Resources Committee and interim Water Policy Committee. He also served as Democratic floor leader in 1985, majority leader in 1989, and speaker of the House of Representatives in 1991.

Natural resource and water issues have occupied much of Rep. Harper's attention. Legislation successfully sponsored by Rep. Harper includes the River Restoration Act, Noxious Weed Trust Fund, Environmental Quality Protection, Hazardous Waste Facilities Siting, Comprehensive Drought Monitoring and Response and formation of Drought Advisory Council. He has also been an active sponsor of bills relating to economic development.

Rep. Harper carried two successful water-related bills in this session. HB 51 revises the drought advisory meeting date and report deadline, and HB 626 expands the authority of the Fish, Wildlife and Parks Commission to protect resources and regulate conflicts on Montana waters, expands safety distances for water craft, and limits use of personalized water craft. Along with Rep. Karl Ohs, Rep. Harper also drafted and co-sponsored HB 458, which requires the Environmental Quality Council to coordinate and disseminate information about best management practices for streamside corridors and riparian areas.

Rep. Hal Harper

In past sessions, Rep. Harper played a big part in passing other legislation addressing the spread of whirling disease, the illegal introduction of fish species, the loss of agricultural riverbank land to development, the creation of local river basin commissions, regulating out-of-state sale of water, and chronically dewatered streams.

Rep. Harper has received the following awards: Montana Environmental Health Association Distinguished Service in Environmental Health (1983); AARP Outstanding Contributions (1987); American Fisheries Society Conservation Achievement Award (1994); Humane Society St. Francis Award (1997); and the Trout Unlimited Mancinelli Conservation Award (1997).

Rep. Harper currently lives in Helena with his wife, Janet.

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WATER LINES

NEWS FROM THE WATER RESOURCES DIVISION
OF THE MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

DEPARTMENT NEWS

TONGUE RIVER DAM DEDICATION CEREMONY HELD ON JULY 1

By Jim Domino

THE OFFICIAL DEDICATION CEREMONY TO COMMEMORATE THE COMPLETION OF THE NEW TONGUE RIVER DAM TOOK PLACE ON THURSDAY, JULY 1. Over two hundred people attended the 1½ hour-long event, which included an opening prayer by a Northern Cheyenne Tribal Elder; speeches by dignitaries from the Northern Cheyenne Tribe, Department of Natural Resources and Conservation (DNRC), and federal agency staff; the unveiling of a new commemorative plaque; and the ceremonial first delivery of water to the Tribe. A catered lunch was served after the ceremony.

Governor Marc Racicot was the keynote speaker at the dedication. Other speakers included DNRC Director Bud Clinch, Water Resources Division Administrator Jack Stults, State Water Projects Bureau Chief Glen McDonald, Regional Director of the U.S. Bureau of Reclamation Maryanne Bach, Dave Pennington from the U.S. Bureau of Indian Affairs, Art Hayes, Jr., President of the Tongue River Water Users Association, and Ernie Robinson from the Northern Cheyenne Tribal Council.

The Tongue River Dam Project included rehabilitation of the 60-year-old earthen dam, which was heavily damaged in a 100-year flood event in 1978. In 1980, the U.S. Army Corps of Engineers identified the dam as unsafe due to its inability to handle this type of flood. For many years, the dam was operated at decreased levels to provide an extra margin of safety for people and property downstream.

The sponsorship of the project involved a three-way partnership in funding between the Northern Cheyenne Tribe, the U.S. Bureau of Reclamation, and the State of Montana. Sixty-five percent of the total costs were paid for by the federal government, with the state and the Tongue River Water Users Association paying for the remainder.

Construction on the project began in August of 1996. The construction occurred in three main phases. Phase 1 involved the construction of a new access road to the dam; aggregate mining, processing, and hauling; and site preparation. Phase 2 was the construction of the new roller-compacted concrete emergency spillway. The emergency spillway at the Tongue River Dam now stands as the largest spillway of its kind in the United States in terms of the total volume of roller-compacted concrete used, (58,000 cubic yards), which is a nationally notable accomplishment Phase 3 included the installation of the new primary spillway and outlet works and the rehabilitation of the existing outlet works.

Fish and wildlife enhancement projects include the Tongue & Yellowstone diversion structure and fish louver, the 8,900-acre Hirsh Ranch conservation easement, and the 957-acre Badger Creek conservation easement. Mitigation involving the Decker Coal Mine continues, with work to begin soon on controlling the additional seepage into the mine pits. The Montana Department of Fish, Wildlife and Parks (DFWP) is planning on new fish stocking in the Tongue River this fall for fisheries mitigation. The

Photo by Cindy Forgey

Governor Marc Racicot speaks at the Tongue River Dam Dedication.

(Continued on page 2)

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http://www.dnrc.mt.gov/wrd/home.htm

(Dedication continued from page 1)

reconstruction of Tongue River Reservoir State Park, which occurred under a separate contract, was one of the major benefits of the project. The new park facilities include a larger boat ramp and developed day use and camping areas. A new interpretive kiosk was constructed by the U.S. Bureau of Reclamation, and a new concession building will be constructed by DFWP in the future, both under separate contracts. The new park facilities will greatly enhance the opportunities for recreationists and provide a high quality experience for Montanans and our out-of-state guests.

As well as addressing safety and structural deficiencies, the completion of the project served to fulfill the obligations made to the Northern Cheyenne Tribe in a 1991 compact between the Tribe and the State of Montana to provide up to an additional 20,000 acre-feet of water annually.

The project is currently being considered for three prestigious national engineering awards and has been described five times in national journals. The project's innovative concepts also resulted in several million dollars in construction cost savings and cut nearly two years off the construction schedule. Because of the cooperation among the contractors, the state, and the Northern Cheyenne Tribe, there was not a single incident of a labor dispute slowing the work. These outstanding accomplishments were realized only because the Tongue River Team demonstrated an exemplary level of dedication and commitment to this demanding project. The $48 million project was designed by a Montana consulting firm, with construction completed entirely by Montana contractors.

Photo by Jim Bond

Tongue River Team: Governor's Award Ceremony.

In September of this year, DNRC's Tongue River Team was awarded the 1999 Governor's Award for Excellence in Performance for their work on the Tongue River Dam Project.

Controlled Groundwater Area Proposal Aims to Protect Existing Water Users and Resources

By Nancy Andersen

The Water Resources Division of DNRC has petitioned, on its own motion, to create a controlled groundwater area in southeastern Montana that will apply to wells drilled for coal bed methane (CBM) extraction. This action is in response to potential large-scale CBM development in Montana. During the past few years, extensive CBM development has occurred from coal-bearing strata within the Powder River Basin geologic structure in Wyoming - approximately 3,000 wells are now in production. Some CBM development has recently occurred in Montana near Decker. The Powder River Basin geologic structure and associated coal-bearing strata extend north into southeastern Montana, and the Water Resources Division expects that CBM development will likely extend farther north into southeastern Montana in the near future. The Water Resources Division and the Montana Board of Oil and Gas Conservation are teaming up to develop a process that will provide CBM development guidelines, as well as protection for existing water uses and the groundwater resources.

How Is Coal Bed Methane Extracted?

Methane gas is held in coal seams by water pressure. CBM technology requires reducing water pressure in the coal beds, which also lowers groundwater levels. Wells are typically placed at regular intervals over large areas covering many square miles, and they are pumped continuously to lower water pressure in the coal bed. When the pressure is lowered to an optimal level, methane gas is released from the coal and can be extracted from the well.

In southeastern Montana, the coal seams that would be targeted are approximately 300, 500, and 800 feet below the ground's surface.

The same coal beds that are targeted for methane production are important regional aquifers in water-scarce southeastern Montana. In fact, these coal aquifers are often the only practical source of fresh water for domestic, stock, and agricultural use by the people in the area.

How Is CBM Production Regulated?

Multi-Agency Responsibilities

Three different state agencies have jurisdiction over aspects of this technology. The Montana Board of Oil and Gas Conservation has primary regulatory responsibility over the development of CBM in the same way it regulates other oil and gas development in Montana. The Water Resources Division administers use of the state's water and protects the groundwater resource and the rights of senior water users. The Department of Environmental Quality (DEQ) regulates the discharge of water and other water quality concerns.

Production of CBM

The Board of Oil and Gas Conservation authorizes the exploration and production phases of CBM extraction. It plans to adopt general development procedures for CBM activities in December 1999 and will additionally adopt specific requirements for development of production fields as applications are received. These field requirements will be case-specific to the particular development.

Withdrawal of Water

After extensive research into the CBM extraction technology, the

(Continued on page 3)

(Proposal continued from page 2)

Water Resources Division of DNRC has determined that the activity does not require a water right. The water is a by-product which the developer does not wish to control or protect. The developer would not "call" junior water right holders if water were not available. Furthermore, the water is not being put to beneficial use as described by Montana law.

However, the controlled groundwater statutes, *Montana Code Annotated* (MCA) 85-2-506 et seq., provide for the establishment of a controlled groundwater area for a variety of reasons. In this case, the Water Resources Division determined, as stated in 85-2-506 (b), "that excessive groundwater withdrawals are very likely to occur in the near future because of consistent and significant increases in withdrawals from within the groundwater area." By "excessive," the department means that water levels in targeted aquifers could be reduced near project areas for long periods of time in a water-scarce area.

Crediting this controlled groundwater area will require that the Board of Oil and Gas Conservation administer special conditions in addition to its normal regulatory requirements, as provided in MCA 85-2-510. These special conditions will be targeted to protect existing water uses and require that the groundwater resource be monitored during CBM development.

Surface Uses of CBM Well Water

Beneficial uses of water produced from CBM operations, such as for stock ponds, wildlife ponds, or irrigation, must have a water right issued by the Water Resources Division, DNRC, as provided by law.

Discharge or Disposal of Water

Since water withdrawn during CBM development is not otherwise consumed, it must be discharged in some matter. Any applicable water discharge permits must be obtained, and water disposal requirements met, before groundwater may be discharged, re-injected, or otherwise disposed. Water discharge permits may include the Montana Pollutant Discharge Elimination System (MPDES) permit from the DEQ, for discharge to surface water, and the Underground Injection Control (UIC) permit from the Board of Oil and Gas Conservation, for discharge or re-injection to groundwater.

To What Will the Controlled Groundwater Area Apply?

The controlled groundwater area will apply only to wells drilled to extract CBM and will require conditions as summarized below, in addition to the usual requirements of the Montana Board of Oil and Gas Conservation.

Standards for Permitting, Drilling, and Producing Coal Bed Methane Wells

The Board of Oil and Gas Conservation will adopt general standards in December 1999. It will adopt additional requirements for field development proposals beyond initial test wells, including submission of development plans; maps of the targeted coal bed; an assessment of existing wells, springs, and streamflow that could be impacted by the operation; and means to mitigate water resource impacts. At a minimum, CBM developers will be required to offer a Water Source Mitigation Contract to all water right holders within a half-mile radius of CBM development. An application for establishment of each CBM production field will be heard by the Board of Oil and Gas Conservation and approval of field rules may include specific requirements and restrictions beyond those established under the general operating standards.

Technical Advisory Committee

The Water Resources Division will designate a Technical Advisory Committee (TAC) with specific expertise in coal aquifer hydrology and shallow groundwater systems. The committee will review groundwater data and scientific evidence related to the Powder River Basin Controlled Groundwater Area and advise the agencies on administration of the area.

The committee will consist of qualified scientists with experience related to the hydrogeology of coal aquifers and CBM extraction operations. The appointments shall be to ensure, to the extent possible, that the committee includes members with expertise in hydrogeology, water quality, and CBM extraction systems and operations.

The TAC will periodically review groundwater data gathered from CBM development. The TAC will prepare an annual report each year of its findings regarding the impact to the groundwater resource from CBM activities and any mitigation recommendations it may develop. The TAC may submit reports more often if it finds it appropriate. Additionally, the TAC will make recommendations to the Board of Oil and Gas Conservation regarding development of specific groundwater characterization, monitoring, and reporting requirements for field developments.

Groundwater Characterization, Monitoring, and Reporting

Hydrologic conditions in the targeted coal beds must be assessed prior to field development. Specific requirements of the field rules will dictate that groundwater pressure is monitored in appropriate locations using dedicated monitoring wells.

The specific requirements for each production field will be developed with consideration of recommendations from the TAC. The procedures will include dedicated groundwater monitoring wells outside of and surrounding the production field. Dedicated groundwater monitoring wells must be placed in the next aquifer above and below the targeted coal seam, if applicable, within the production field. Also, as a minimum requirement, at least one 24-hour aquifer test must be conducted using at least one observation well, and baseline groundwater pressures and water quality data must be obtained from the monitoring wells prior to production.

Data Collection and Notice Procedures

Data collected from the testing and production of CBM wells and groundwater monitoring wells required by the Board of Oil and Gas Conservation will be available to the public and provided to the Montana Bureau of Mines and Geology.

The board will publish notice in accordance with its existing procedures, and, additionally, water right holders on record with the Water Resources Division, DNRC, will receive individual notices of production field development hearings.

Well-Drilling Precautions in Coal Bed Methane Areas

Water well developers and drillers must exercise caution when drilling water wells in or near CBM projects as free methane gas may be encountered in one or more coal beds.

For more information about the controlled groundwater area, call Nancy Andersen, DNRC Water Rights Bureau Chief, (406) 444-6631. For other information about the production of CBM, call Tom Richmond, Administrator, Montana Board of Oil and Gas Conservation, (406) 656-0040. Call DEQ's Water Protection Bureau, at (406) 444-3080, for information about the MPDES permit.

An Old-Fashioned Montana Winter for 1999-2000

By Jesse Aber

LAST YEAR AT THIS TIME I WROTE AN ARTICLE FOR *WATER LINES* TITLED, "WHAT THIS WINTER MAY BRING." In that piece I traced the demise of the 1997-98 El Niño, which brought us nearly 30 days of over 90-degree temperatures from June to mid-September of 1998, and the emergence of the 1998-99 La Niña event. What can we expect in Montana for the winter of 1999-2000? Are we entering, exiting, or between climate anomalies?

According to the National Climate Prediction Center (CPC) *Diagnostic Advisory* issued October 14, 1999: "At the present, subsurface oceanic conditions continue to reflect the ongoing cold episode with no signs of an evolution toward a pre-warm episode state. Thus, it is likely that cold episode conditions will continue for the next several months." The CPC is telling us that conditions consistent with La Niña events are still in place and growing off the west coast of South America. Those conditions translate into a high degree of confidence that Montana will experience a wetter-than-normal and probably a colder-than-normal winter.

To briefly review the differences between an El Niño and a La Niña, I will quote a piece from the Great Falls Office of the National Weather Service Internet home page, "Miscellaneous" section:

"La Niña and El Niño are extreme phases of a naturally occurring climate cycle referred to as El Niño / Southern Oscillation. Both terms refer to large-scale changes in sea-surface temperature across the eastern tropical Pacific. Changes in the ocean impact the atmosphere and climate patterns around the globe. In turn, changes in the atmosphere impact the ocean temperatures and currents. The system oscillates between warm (El Niño), to neutral, to cold (La Niña) conditions on average every three to five years."

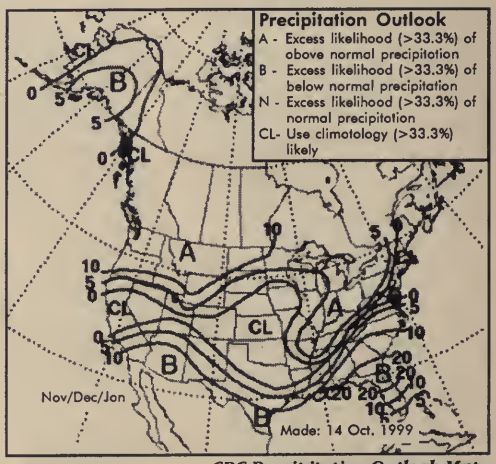
"One important item to remember is La Niña winters are quite variable in Montana. Some have seen above normal temperatures, and some have had below normal snowfall. On balance, it averages out to colder than normal and snowier than normal."

According to National Weather Service Area Manager Ken Mielke, "As it turned out, the 1998-99 winter was quite mild across most of the state and dry in the valleys and across the plains of central Montana. Snowfall in the mountains was normal to above normal and, also, above normal across the northeastern plains. It was very windy along the east slopes of the divide most of the winter."

"As we approach the 1999-2000 winter, a moderately strong La Niña continues in the equatorial Pacific, and the lingering warmth in the waters of the mid and northern latitudes of the Pacific is long gone. The official winter forecast from the National Weather Service's Climate Prediction Center calls for below normal temperatures east of the divide and above normal precipitation across the state for the upcoming winter. This season will likely be more typical of a Montana winter, unlike the two previous years. We'll see changes and extremes, cold spells followed by warmer periods but, overall, a good chance we'll be a bit colder and snowier than normal by the time we get into the spring months." At the October 14, 1999, meeting of the Governor's Drought Advisory Committee, Mielke distinguished the La Niña winter of 1998-99 from what he expects in the winter of 1999-2000 by saying, "We're going back to a more normal winter." Recalling the sparse snow in the valleys and plains and the moderate temperatures of 1998, he said, "It's going to be a little different winter." Mielke expects an "old-fashioned winter" in Montana valley towns, in contrast to the "open" winter of 1998-99 when relatively little snow fell below an elevation of 5,500 feet above sea level.

Spring - Summer of 1999

The bright spot for Montana water supply for 1999 was the abundant mountain snowpack west of the Continental Divide which occurred, in part, due to the influence of a powerful jet stream flow that put a record snowpack on the Cascade Mountains of Washington before slamming into Montana's Rockies. Even with heavy demand for irrigation water and precipitation one-half of normal or less, streams and rivers west of the divide were average to well above average throughout the summer. East of the divide, however, poor precipitation all spring put pressure on runoff from an average mountain snowpack to provide irrigation water, resulting in some very low streamflow on the Big Hole, Smith, Teton, Dearborn, Shields, and Musselshell rivers.



CPC Precipitation Outlook Map.

In conclusion, the prospect of a wet winter is welcome to most Montanans, with a colder winter appealing to somewhat fewer folks. With an undulating jet stream snaking across the state, the winter weather should be far from boring. Fall has arrived in a warm and friendly manner, and no one is complaining about that except some hunters. One look at the CPC Precipitation Outlook Map for November through January, however, indicates that winter could be just around the corner.

Rep. Story Looks for Solutions to Montana Water Issues

By Cindy Forgey & Jesse Aber

Montana State Representative Robert Story, Jr., is a fourth generation farmer/rancher who operates a diversified livestock and irrigated farming operation in Park City, Mont. Using both sprinkler and flood irrigation systems, his farming operation produces a variety of crops such as alfalfa, corn silage, dry beans, spring wheat, and barley. He has lived on the family ranch all of his life except for the years he spent at Montana State University, where he received a degree in agricultural education. He also spent three years teaching vocational agriculture in Opheim, Mont., in the 1970s.

Rep. Story became involved in water issues at the beginning of the water right adjudication process. He had several water permits that had to be defended against some claims dealing with old water rights. In order to work with the adjudication system, he decided it was better to learn a little about water law and to do most of the objection work himself. This approach worked out as he was able to work through all of his concerns with filed claims and maintain the value of the permits upon which he depended to irrigate.

In the mid 1980s, Rep. Story was elected to the Stillwater Conservation District (CD) Board of Supervisors. While with the CD board, he worked on improving the 310 permitting process, the efficiency of irrigation water use through the use of surge flow devices, and the process of straw-mulching in row crops. He also worked on the neutron probe studies to schedule irrigation. Rep. Story was also involved with the Montana Farm Bureau and Montana Stockgrowers Association, where he spent time working on water policy issues. He was also appointed to two work groups to develop the State Water Plan.

In the early 1990s, he worked through the conservation district to educate livestock producers on nonpoint source (nps) pollution water quality problems resulting from corrals and livestock facilities near creeks. He had a livestock facility himself and could see, firsthand, the problems that everyone would eventually face. He organized a workshop for several counties in his area to identify typical livestock facility problems and proposed some cost-effective solutions to them.

Representative Robert R. Story.

Involvement in community agricultural activities eventually led him to run for the state legislature. He was elected in 1994 and served three terms in the Montana House of Representatives. He has served on the House Natural Resource Committee and on the Reserved Water Rights Compact Commission.

When asked for his opinion on the most challenging water quality issue facing Montanans today, Rep. Story replied that, other than mine cleanup, it would have to be dealing with nonpoint sources.

"Now that many of the point source problems in Montana have been under scrutiny for the past 25 years, the focus of regulatory agencies and watchdog groups will shift to the non-point source area. The main target will be agriculture and, in particular, livestock confinement facilities. There is, however, a more difficult issue dealing with irrigation water runoff, especially in row-crop areas. This will be harder to deal with because of the acreage involved and the interdependence of water users on the availability of return flows," said Story.

Rep. Story believes that the most challenging water quantity issue will be the conflict between diversionary users and recreational users. He said, "As recreation becomes a larger industry, and more people are making a living from guiding fishermen and operating rafting businesses, there will be more conflict over water levels in some streams. This will not be just a problem in dry years, but in any year as streams become more crowded. There will also be conflicts between traditional recreational users, and those who operate commercial recreation businesses."

Rep. Story believes that, ten years from now, one of the most challenging water-related issues will be "dealing with the changing demands brought on by commercial use of Montana's surface waters for recreation."

Story explains that another challenge in the future will be "upgrading and maintaining municipal wastewater treatment plants to meet changing federal and state regulations" because of the associated costs.

Story mentions a third challenging issue that will affect us in the future. "Endangered species and their management will affect water use in many areas of the state."

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Employees Recognized at Awards Ceremony

By Cindy Forgey

On July 29, 1999, an awards ceremony was held in Pioneer Heritage Park in Helena to recognize Water Resources Division staff for outstanding performance and longevity.

Special recognition plaques were given to Larry Dolan for his work on the West Crane Irrigation Project Environmental Assessment, to Faye Bergan and Pat Riley for their work on the Crow Compact, and to the Water Rights Bureau for successful completion of the inventorying, bar-coding, and labeling of more than 240,000 files.

Other special recognition certificates were given to Jesse Aber, Paul Azevedo, Tim Bryggman, Marvin Cross, Jim Edgar, Regina Fullerton, Ann Glubczynski, Ann Goetze, Robin Harper, Shaunda Hildebrand, Nancy Hughes, Scott Irvin, Becky Ketchum, Jim Kindle, Bob Larson, Vivian Lighthizer, Julie McNichol, Ron Miller, Kim Overcast, Illa Phillips, Rich Russell, Terry Scow, Tracey Turek, and Mary Ellen Wolfe.

Photo by Mandi Shulund

Jack Stults presents awards to recognize Water Resources Division staff.

Longevity awards were given to Tim Bryggman, Dolores Eustice, Becky Ketchum, Michele Lemieux, Jim Robinson, Sheri Smith, Cynthia Spethman, and Mike Wherley for 5 years of service; Larry Dolan, Jan Langel, Larry Schock, Terry Scow, Marshall Sewell, Tracey Turek, Kraig VanVoast and Kirk Waren for 10 years; Jack Stults and Pam Weinmeister for 15 years; Craig Dubois, Jim Gilman, Judy Jeniker and Rusty Taylor for 20 years; and Glen McDonald and Rita Nason for 25 years of service.

Congratulations to Everyone for a Job Well Done!

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WATER LINES

NEWS FROM THE WATER RESOURCES DIVISION
OF THE MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

DEPARTMENT NEWS

State Water Projects Bureau Completes Broadwater-Missouri Pipe Span Lining

By Tim Kuehn

The Department has completed the first phase of rehabilitating the aging Broadwater-Missouri pipe span near Toston, Mont. The pipe span was originally constructed in 1940 and had suffered extensive corrosion of the interior lining. The 7-foot diameter, 666-foot-long steel pipe transports irrigation water across the Missouri River to members of the Broadwater-Missouri Water Users' Association. The project services approximately 24,000 acres of land.

The contract for rehabilitating the pipe span interior was awarded to Interstate Coatings, Inc. (ICI), from Kennewick, Wash., in October 1999. Supervision of the interior lining was conducted by Charlie Atkins, Project Bureau Construction Oversight Specialist. Equipment was mobilized to the job site and work began in November 1999. The coal tar enamel liner was removed, and the pipe interior was sandblasted to remove the corrosion and scale from the steel substrate. The pipe was then coated with a zinc/aluminum metalizing spray and an epoxy sealer that will serve as the new liner and provide cathodic protection to the steel substrate. Phase one of the pipe span rehabilitation was completed in February.

A contract to rehabilitate the pipe-span exterior will be advertised this spring and awarded in July. This work is scheduled to begin this fall and will include replacing the deteriorated wooden catwalk with steel grating, repairing and upgrading the expansion joint, and painting the exterior surface with a reflective aluminum topcoat.

The 1999 Legislature approved a Renewable Resource Loan (House Bill 8) in the amount of $509,426 to provide funding to rehabilitate the structure. The loan is administered by the State Water Projects Bureau and will be repaid by the Water Users' Association.

Broadwater-Missouri Pipe Span.

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Supreme Court Addresses the Right to a Clean and Healthful Environment

By Tim Hall

On Oct. 20, 1999, the Montana Supreme Court held the 1972 Montana Constitution guarantees the "constitutional right to a clean and healthy environment and to be free from unreasonable degradation of that environment," 1999 MT 248 (Montana Environmental Information Center; Clark Fork-Pend Oreille Coalition; and Women's Voice for the Earth v. Department of Environmental Quality and Seven-Up Pete Joint Venture - Cause No. 97-455; now commonly referred to as the MEIC case). The court concluded that the right to a clean and healthful environment is a fundamental right, and held that any statute or rule which implicates that right "must be strictly scrutinized and can only survive scrutiny if the State establishes a compelling state interest and that its action is closely tailored to effectuate that interest and is the least onerous path that can be taken to achieve the State's objective."

The Seven-Up Pete Joint Venture was running pump tests at its McDonald Gold Mine Project outside of Lincoln involving the pumping of groundwater and its subsequent release into groundwater infiltration gallery mixing zones near the Blackfoot River and the Landers Fork. The released water contained arsenic, a known carcinogen. Officials at DEQ had issued formal authorization for the proposed discharges according to Mont.Code Ann. § 75-5-317(2)(j), which excludes certain activities from review under the Water Quality Act's nondegradation policy. The Supreme Court remanded the case back to the district court for strict scrutiny of the statutory provision which automatically precludes certain activities from nondegradation review.

It is noteworthy that the court stated its decision applied to state or private action. In regard to water, it is also worth noting that the court stated "our constitution does not require that dead fish float on the surface of our state's rivers and streams before its farsighted environmental protections can be invoked."

The implications of the case are still being studied by the administration, the Environmental Quality Council of the legislature, the DNRC and other state agencies.

Construction of Embankment and Alluvial Dike Begins at Tongue River Reservoir

By Jim Domino

The construction of a 1200-foot embankment and alluvial dike on the west side of Tongue River Reservoir began on March 14. The dike is being constructed to reduce subsurface water seepage into the North Decker Coal mines. The increased water seepage was the result of the recently completed Tongue River Dam Rehabilitation Project, which raised the reservoir level four feet.

The dike was chosen as the best alternative to deal with the water seepage issue. Mitigation is required for impacts to Decker's mining operation under the original Tongue River Dam Rehabilitation Agreement. An extensive investigation of other alternatives was conducted by State Water Projects Bureau staff, working closely with ESA Consultants Inc., of Bozeman. The dike alternative had the lowest level of impact to the environment, and was the most cost-effective way of dealing with the problem. Excessive water flows during the summer of 1999 created a large headcut on the east end of Decker's Pit 16. The headcut threatened to undermine a nearby powerline, the Spring Creek Coal Railroad Tracks, and State Highway 314, and created a serious public safety issue. The dike will address this public safety concern by reducing the water seepage to manageable levels.

The project is a cooperative venture between DNRC and Decker Coal Company. Decker Coal Company is using their own equipment and crews to construct the dike. A State Water Projects Bureau Engineer is on-site at all times to oversee the construction. Approximately 37,000 cubic yards of material will be involved in the cut and fill operation. Upon completion, the dike will be fifteen feet high, twenty feet wide at its crest and graded to three one side slopes. The project also involves the realignment of a small section of Pearson Creek. Rock riprap will be placed on the reservoir side of the dike to protect the structure from erosion. The dike will remain in place until mining activity in this area ends, in approximately ten years. The Department of Environmental Quality, in issuing a revision to Decker's mining permit allowing Decker to work on the project, stipulated that the dike would be removed after the ten-year period.

The estimated completion date of the project is May 5, 2000.

La Niña 1999 - 2000: Was She a No-show, or Just Running a Little Late?

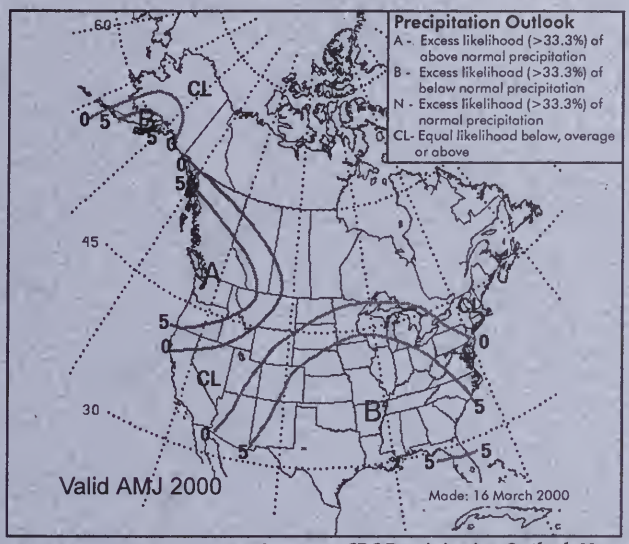
By Jesse Aber

Last Fall, I wrote an article for Waterlines titled, "An Old-Fashioned Montana Winter for 1999-2000." In that piece I traced the emergence of the 1998-99 La Niña event. At that time, I quoted the National Weather Service (NWS) Great Falls Montana Area Office Internet page section on El Niño and La Niña :

Those (La Niña or cold event) conditions translate into a high degree of confidence that Montana will experience a wetter-than-normal and probably a colder-than-normal winter. One important item to remember is La Niña winters are quite variable in Montana. Some have seen above normal temperatures and some have had below normal snowfall. On balance, it averages out to colder than normal and snowier than normal.

As winter gave way to spring with the passing of the vernal equinox on March 20th, it became apparent that Winter 1999-2000 bucked the La Niña pattern over time for the state that placed odds with a colder and wetter winter than average. At the March 23, 2000 Governor's Drought Advisory Committee meeting, Ken Mielke, NWS Montana Area Manager, noted that the La Niña event had not delivered the levels of moisture hoped for in Montana over the course of the winter and that the temperatures were notably warmer than usual. As the year came to a close, it became official: 1999 was the third-warmest year, and December 1999 the warmest December in Montana over the entire 106-years of record-keeping, according to Mielke. This revelation came on the heels of the facts that 1997 had been the 23rd warmest, and 1998 the fifth-warmest years in Montana over the 106-year record.

Was the Montana La Niña forecast for winter precipitation as far off the mark as was the forecast for temperatures for the same period? Roy Kaiser, Water Supply Specialist with the Montana Snow Survey and Climate Services of the Natural Resources Conservation Service, reported that there was a notable lack of low to mid-elevation mountain snowpack this winter, much like last year. However, at the higher elevations, where most of the SNOTEL real-time gauging network exists, and from which most of the summer water supply originates, the water content of the snowpack ranges from average west of the Continental Divide to about 15 percent below average east of the divide. The significance of the absence of low-elevation snowpack is the effect on soil moisture and runoff. If soils are dry, runoff from snowpack to streams will be reduced, as it is intercepted to recharge soils and groundwater.



CPC Precipitation Outlook Map.

If one looks back at the Fall 1999 precipitation forecast for winter in Montana, it is apparent that the anomaly was not forecasted to extend much more to the east than the Continental Divide, which is very close to the current extent of average mountain snowpack in the state. And remember, La Niña winters in Montana only promise high variability in conditions and not necessarily cool and wet winters. The La Niña forecast for Montana winter precipitation may have fallen short of our hopes, but springtime in the Rockies always includes precipitation as snow.

According to the National Weather Service, normal temperatures for early April in Montana are highs in the lower 40s to upper 50s and lows in the upper teens to near 30 degrees, F. But, with a strong La Niña signal still in place with little, if any signs of waning, what climate conditions can we expect in Montana for the Spring and Summer of 2000? Could Montana still see cooler and wetter than average climate conditions? According to the National Climate Prediction Center (CPC) Diagnostic Advisory issued March 16, 2000:

Tropical convection patterns continue to be consistent with a

(La Niña Continued on page 4)

(La Niña continued from page 3)

strong event. Sea surface temperatures in the equatorial Pacific continue to be mainly between 1 and 2 centigrade degrees below normal. La Niña conditions are expected to last through the spring and possibly well into the summer. With the la Niña still going strong now, it seems unlikely that it will disappear completely by June or July.

The Climate Atlas of Montana, (Caprio & Nielsen 1992, p. 15) notes that in April, precipitation increases greatly east of the Continental Divide, both in the plains of the central and eastern regions and the mountains north and south along the Divide, where precipitation of six inches or more can be expected. Indeed, this is the time of year for big jumps in water content in the headwaters of the Missouri and Yellowstone rivers, including Yellowstone Park. One significant storm in Spring of 1999 turned the water supply picture for southcentral Montana and northern Wyoming from below to above average in about 48 hours, filling reservoirs nearly overnight. The Climate Atlas of Montana, (Caprio & Nielsen 1992, p. 15) notes that in April:

Precipitation is much less than in March in the mountains west of the Continental Divide due to less up-slope air movement, but precipitation increases greatly east of the Divide. The high mountains of the south and in the north near the Divide receive more than 6 inches of moisture. Most precipitation in the plains occurs as wet snow or rain showers with southern plains receiving more than an inch of precipitation. Locations in the northeast experience a secondary peak of precipitation in late April and early May which is associated with storms that deposit a half inch or more of precipitation. Drought years are notably linked with the failure of these early season storms.

As of the last week of March 2000, the state had received amounts of precipitation in the one-half of an inch range in parts of the south-central, eastern, central, western, northeast, and north-central regions. April 2000 came in like a lion with reports of close to 30 inches of snow in the Little Belt Mountains and fresh powder at other state ski resorts, as well as valley precipitation in varying amounts from one-third to one-half inches. The forecasts are calling for more moisture in coming weeks and there is no reason to expect the trend to end anytime soon. Precipitation for Montana valley locations for March ranges from .5 inch to 1 inch, and for April 1 to 2 inches. The Climate Prediction Center precipitation outlook for April calls for normal statewide precipitation and slightly warmer temperatures east of the Divide. The period of April through June calls for above average precipitation and temperatures extending from the Pacific Northwest into the western one-half of Montana.

So, although winter is officially over, the mountain snowpack accumulation period could easily extend into May. Three of the past four snow seasons in Montana (1996, 1997 and 1998) have seen the peak accumulation of snow water content stretch out into mid-May, well past the 30-year average date of April 15. And, just as we are getting used to the mild temperatures, the daily temperature range may "slip" below average by staying relatively constant, as the historical average increases moving toward summer.

The Governor's Report on the Potential for Drought will be released at the April 18, 2000 meeting of the Governor's Drought Advisory Committee and the member agencies will present their water supply and moisture condition updates. We eagerly await the meeting and the continued arrival of timely doses of moisture as the growing season approaches. And do not write off La Niña too soon - she could just be running a bit behind schedule.

Mr. Aber staffs the Governor's Drought Advisory Committee. He is not a meteorologist or climatologist.

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Montana Water Trivia

What is the only river in Montana that flows both directly north and directly south?

Answer: The Big Hole River

Milk River International Alliance Advertises for Coordinator Position

By Marvin Cross

After a year of organizational meetings, the Milk River International Alliance (MRIA) began advertising for a part-time coordinator position. MRIA is a watershed group consisting of basin residents and natural resource managers who are working together to help resolve natural resource issues within the Milk River Basin. The term "International" highlights the importance of the basin to citizens on both sides of the international boundary. The Alliance is open to all U.S. and Canadian basin residents who wish to participate.

Contract proposals from organizations or individuals will be considered for the coordinating duties. Applicants must have experience and demonstrated skills in program coordination, communications, facilitation, fund raising, grant writing and budget management. Experience in natural resource management programs is desired

The successful candidate will be expected to answer to the MRIA Advisory Council, which is presently made up of four private volunteer residents representing water users within the basin. The part-time coordinator can initially expect to work from 40 to 50 hours per week. Objectives outlined in the preliminary draft MRIA 2000 Work Plan include the following:

(1) Promote Public Understanding of Water Quality on the Mainstem of the Milk River and its Tributaries

(2) Complete an Educational Guidebook for the "The Milk River: International Lifeline of the Hi-Line" Video that was produced for a "Know Your Watershed" workshop conducted on January 30, 1998

(3) Organize a Watershed Tour(s)

(4) Promote Public Involvement in the Federal Reserved Water Right Negotiations with the Gros Ventre and Assiniboine Tribes of the Ft Belknap Reservation.

The Coordinator will be expected to assist in the development and implementation of this MRIA Work Plan.

Besides private water users, the MRIA also consists of a Technical Advisory Council made up of representatives of various Federal, State, and Local governmental agencies that deal with water resource issues within the basin.

Photo by Kraig VanVoast

Milk River outside of Havre, Mont.

Floodplain Management—A New Start for the New Millenium
1st Annual Association of Montana Floodplain Managers Conference
May 16-18

Location:
Ramada Inn Copper King, 4655 Harrison Ave., Butte, Montana

Sponsored by:
DNRC Floodplain Management Section and the Association of Floodplain Managers

Registration:
The registration fee is $55 per person if received by May 1, 2000 and $65 after this date (includes lunch on Wednesday and Thursday). The registration fee also includes a 1-year membership with the Association of Floodplain Managers. Room reservations can be made at the Ramada Inn Copper King by dialing 1-800-332-8600. A block of rooms has been set aside at a rate of $35 plus tax for the nights of May 16, 17 and 18. This block of rooms will only be reserved until May 1, so make your reservations early.

For more information you can call Karl Christians at the DNRC, 406-444-6654 or e-mail him at kchristians@state.mt.us

Ed Lord–Upper Flint Creek Valley Rancher

By Cindy Forgey

Ed Lord is part owner and manager of Lord Ranch Co., a family cattle ranch in the Upper Flint Creek Valley, about 12 miles south of Philispburg. The operation is a combination of two ranches with over 4000 deeded acres, including leases on school trust land and National Forest. Twelve hundred acres of the deeded land is either irrigated pasture or irrigated hay land. One thousand acres of the land is irrigated using eight center pivots and the additional land is flooded by a system of contour ditches. The water sources are decreed and appropriated water rights and eleven hundred acre-feet of contract water from the Flint Creek Water Users Association.

Ed is currently the president of the Flint Creek Water Users' Association and has held the position for the past twenty years. The Flint Creek Water Users' Association maintains and operates a DNRC project with a storage reservoir in the Flint Creek Valley. The association has spent a great deal of time and effort to support the project because a dependable supply of water is so vital to ranchers in the Flint Creek Valley. Ed praised the Flint Creek Water Users' Association Board of Directors and the talents and support of the State Water Projects staff from DNRC.

When asked for his opinion on the most challenging water quality/quantity issue facing Montanans today and the most challenging water-related issue facing Montana in the next ten years, Ed stated that, in his opinion, both questions have the same answer. "The most challenging issue is that of achieving an economically and socially acceptable balance between the competing uses of water in the State of Montana." Ed also stated that there must be a balance between pure, pristine water that the recreation community demands and the continued existence of viable agriculture and industry. He doesn't see these issues getting any easier in the next ten years. Ed feels that it is going to take a major effort on everyone's behalf to achieve the acceptable balance but he truly believes this is a achievable endeavor.

Ed Lord.

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WATER LINES

NEWS FROM THE WATER RESOURCES DIVISION
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DEPARTMENT NEWS

THE UPPER YELLOWSTONE RIVER CUMULATIVE EFFECTS INVESTIGATION: TRANSLATING SCIENCE INTO PUBLIC POLICY

By Jim Robinson

The Yellowstone River is the focus of growing ecological, economic, social, and political concerns. Recent events and activities include the floods of 1996 and 1997, substantial increases in stream bank stabilization and containment activities, debate over the impact of bank stabilization on the river and its ecosystem, legal challenges to permitted actions, confusion over the responsibilities and authority of various agencies, and fragmented efforts to study the cumulative effects of stream bank stabilization. In the fall of 1997, Governor Racicot appointed the Upper Yellowstone River Task Force to provide a public forum for discussion of certain problems related to the river, within Park County, and to devise solutions to these problems.

Yellowstone River near Allens Spur - Photo by Jim Robinson

The overall goal of the task force is to develop a set of publicly supported river corridor management recommendations that address potential adverse cumulative effects of river channel modification and floodplain development. These management recommendations will provide a basis for improved regulation of projects proposed within the active stream channel and adjacent floodplain. Development of the management recommendations involves five major phases:

1. Resource data collection, analysis, and mapping
2. Resource condition assessment
3. Development and evaluation of management options
4. Selection of preferred management options
5. Preparation of management recommendations.

To implement phases 1 and 2, the task force commissioned the Upper Yellowstone River Cumulative Effects Investigation. With assistance from the Department of Natural Resources and Conservation (DNRC), Water Management Bureau a technical proposal was developed, and, in 1999, the Montana Legislature awarded the Task Force $300,000 from the Reclamation and Development Grants Program to conduct an interdisciplinary

(Continued on page 2)

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DNRC - WATER RESOURCES DIVISION HIRES NEW BUREAU CHIEF

By Cindy Forgey

Curt Martin was recently hired as the new Water Rights Bureau Chief for the Helena Central Office. Curt was born and raised in Miles City, Montana. He attended and graduated from Montana State University (MSU) with a Bachelor of Arts degree in political science in public administration. He went on to receive his Master of Public Administration degree in Natural Resource Management, also from MSU.

Curt Martin - Photo by Cindy Forgey

Curt has a strong record of achievement as a research assistant with The 49th Parallel Institute at MSU and with the Environmental Quality Council, as a planner and supervisor of the Water Management Bureau's Planning Section, and more recently as the regional manager of the Missoula Regional Office.

Curt will be a great addition to the Helena Central Office. His ability to work well with a wide range of people, along with a sharp mind for the complexities of water policy, combine with his commitment to practical approaches to make Curt an effective problem-solver and respected coworker. Curt assumed his duties as bureau chief in Helena on November 6th.

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Upper Yellowsone River...
(Continued from page 1)

scientific investigation. The investigation is managed by the task force through an appointed technical advisory committee that is responsible for ensuring coordination and consistency between study components.

Additional funding for the effort has been obtained from a variety of sources: the U.S. Army Corps of Engineers, the Montana Departments of Environmental Quality and Transportation, and the U.S. Environmental Protection Agency through the §319 grant program. The multi-year investigation has now been under way for about a year; the study reach includes the active channel and immediately adjacent floodplain from Gardiner to Springdale - a river distance of about 80 miles. Data collection activities to date include acquisition of large-scale aerial photography and preparation of orthophoto quadrangles of the study reach, channel surveying by the U.S. Geological Survey (USGS) in support of floodplain mapping and hydraulic analysis, cottonwood aging as part of the riparian investigation by the University of Montana, and fishery population surveys conducted by the Fishery Research Unit at Montana State University.

Another fundamental component of the overall scientific effort is the investigation into historical channel changes and geomorphology conducted by DNRC's Water Management Bureau. Geomorphic data collection activities have included reconnaissance mapping, channel classification, and sediment size distribution. Fieldwork for the geomorphic component began in 1999 and was conducted through the late summer and fall of 2000.

Work in progress on historical channel changes involves digitizing and overlaying recent and historical channel alignments from USGS topographic quadrangles. Those segments with excessive channel shifting will be more closely examined using historical air photo coverage to determine channel migration rates. Digitizing services for the historical channel mapping are being provided by DNRC's Information Technology Bureau with technical support and guidance from DNRC's Water Resources Division (WRD) GIS program manager.

FEASIBILITY STUDIES COMPLETED AT BAIR AND NEVADA CREEK DAMS

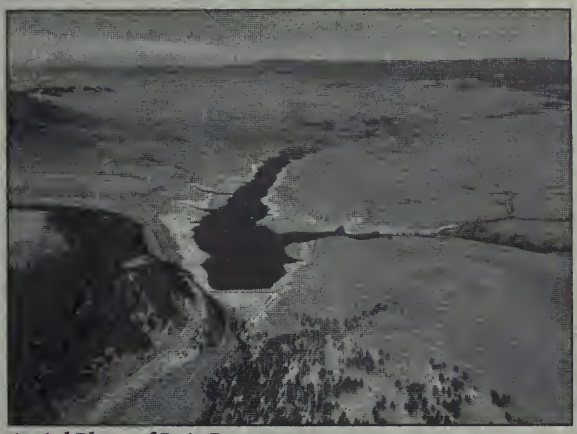
By Tim Kuehn

The feasibility study documents to rehabilitate Bair and Nevada Creek Dams have been completed and submitted to DNRC by HKM Engineering, Inc. John Sanders, DNRC project manager, has been overseeing the engineering studies, geotechnical analyses, and related tasks necessary to produce feasibility-level designs and cost estimates to rehabilitate these projects.

Bair Dam is located 0.5 mile west of the community of Checkerboard in Meagher County. The State Water Conservation Board (SWCB) built the earth-filled dam in 1939 to store irrigation water for the upper Musselshell valley . The dam is managed by the State Water Projects Bureau (SWPB), successor to SWCB, and operated by the Upper Musselshell Water Users Association. The reservoir has the capacity to impound approximately 7,300 acre-feet.

The concrete spillway has been deteriorating for many years, and talus from an adjacent slope creeps into the spillway, creating a maintenance problem. Additionally, the capacity of the spillway does not comply to current dam safety standards. The U. S. Army Corps of Engineers (COE) designated the dam as unsafe, and the dam is classified as high hazard due to the potential loss of life should the dam breach. The reservoir has been operated at a reduced capacity for the past three years in response to the unsafe conditions.

The feasibility study to rehabilitate Bair Dam included a geotechnical drilling program, geophysical analysis, and flood hydrology studies to determine the magnitude of the probable maximum flood (PMF). Numerous spillway configurations were evaluated to develop costs relating to various design capacities and to aid in the selection of an economical spillway design. An economic analysis of the project to indicate repayment ability and the economic impacts of the project was also performed. A class I cultural resources investigation of the area was included in the feasibility study. Patrick Rennie, DNRC archeologist, and John Sanders completed the class III cultural resources survey.



Aerial Photo of Bair Dam - Photo by Horizons, Inc.

The Projects Bureau's preferred alternative for rehabilitation of Bair Dam is to replace the existing spillway and excavate the adjacent slope to eliminate the talus creep. The new spillway would have a design capacity of 10,000 cubic feet per second (cfs) with an ultimate capacity of 14,000 cfs at the dam crest. The new spillway would consist of a 65 foot wide ogee crest and a chute tapering from 65 feet wide to 32.5 foot wide. The final downstream portion of the structure would be a combination jump/flip stilling basin.

Nevada Creek Dam is located five miles south of Helmville in Powell County adjacent to Montana Highway 141. The earth-filled dam was built on Nevada Creek, a tributary of the Blackfoot River, by SWCB in 1938. Recent aerial mapping reveals the reservoir capacity is 11,200 acre-feet of water. The Nevada Creek Dam is managed by the SWPB and operated by the Nevada Creek Water Users Association.

The primary safety deficiencies at Nevada Creek Dam are the poor structural condition of the spillway and excessive seepage downstream of the dam. It is believed that the spillway concrete was placed during freezing conditions without thermal protection, allowing accelerated deterioration of the concrete and resulting in exposed rebar on the chute walls. Some of the seepage is due to the embankment abutted to, and the spillway is built on top of permeable slump material. Like Bair Dam, Nevada Creek Dam is classified as high hazard due to

(Continued on page 4)

Feasibility Studies Completed...
(Continued from page 3)

the potential loss of life in the event of breaching, and COE has designated the dam as unsafe. In a 1981 report, COE indicated that the spillway has inadequate capacity and identified the excessive seepage as an area of concern warranting further evaluation.

The Nevada Creek Dam feasibility study included the same components as the Bair study and seepage analysis. Electrical resistivity and self-potential data were obtained to assist in evaluating the seepage problem. Additionally, test relief wells were drilled to gather data during the reservoir-filling cycle prior to final design.

The preferred alternative at Nevada Creek is to build a new primary spillway adjacent to the existing spillway. The new spillway would have a 50 foot wide ogee crest with a straight chute and a USBR Type III stilling basin. Excavation material from the new spillway would be used to "bury" the old spillway. The spoil material would be placed as erodible fill that would wash out and provide an emergency spillway if flood levels exceed the 5,000 cfs design capacity of the primary spillway. The combined capacity of the two spillways would be approximately 15,000 cfs (one-half the PMF). Seepage and embankment improvement options include extending the outlet conduit 180 feet, constructing a toe berm, and installing relief wells and drainage devices to control downstream seepage.

Aerial Photo of Nevada Creek Dam - Photo by Horizons, Inc.

The State Water Projects Bureau intends to rehabilitate both projects simultaneously. DNRC will request funding from the upcoming legislative session. Loan and grant applications have been reviewed ranked for funding. Finds would also come from hydropower earnings at DNRC's Toston Dam. The Bair Dam and Nevada Creek Dam rehabili-tation plans received the first and second priorities, respectively for funding. Total expenditures for the rehabilitative efforts for both projects would be approximately $5.2 million.

Pending legislative approval, SWPB will hire a final design consultant prior to the beginning of the fiscal year and award a contract soon after July 1, 2001.

HOW ABOUT A "NORMAL" WINTER FOR MONTANA?

By Jesse Aber

As the state slowly stops reeling from what was, in the opinion of some experts, the worst wildfire year in Montana since 1910, and perhaps the worst surface water drought since 1977, many are wondering what we can expect for temperatures and precipitation for the first half of the Year 2001. After forecasters called for a cool and wet La Nina climate anomaly for the year 2000, Montana had its third warm and dry winter in a row.

According to Ken Mielke, meteorologist in charge for the Montana Office of the National Weather Service(NWS) in Great Falls, the year 2000 seemed to be like 1999, ranked as the third warmest and 36th driest over the 105-year record. La Nina year 1998 ended up in the record books as the fifth warmest and the 83rd driest. As of October 1, year 2000 is currently ranked as the ninth warmest and 15th driest over the period of record.

Of course, precipitation deficits do not end with calendar years, and indeed impacts become even more debilitating when dry years are back-to-back. Precipitation deficits for the year 2000 currently range from about an inch at Bozeman to nearly six inches at Great Falls and elsewhere. If year 2000 precipitation deficits are added to year 1999 deficits, we are pushing deficits into the four-to ten-inch range.

Two months into the 2001 Water Year, the water content of the mountain snowpack is the best indicator of how the water supply is shaping up. West of the divide, the Upper Clark Fork River Basin is nearly 80 percent of average, and the Bitterroot is about 60 percent. The other westside basins, including the Flathead, Kootenai, and Lower Clark Fork, look dismal at between 36 and 48 percent of average. East of the divide, the Missouri headwaters is at 85 percent of average, and the mainstem is about 60 percent of average. The Yellowstone River basin is only about 50 percent of average. Snow Survey records indicate that 20 percent of the annual mountain snowpack

(Continued on Page 5)

THAT STREAM HAS NEVER GONE DRY AS LONG AS I HAVE LIVED HERE!

By Scott Compton

There were many stories from the old timers that a particular stream, spring, or well had never gone dry as long as they could remember. This season happens to be one of the very driest in a long time for most of the state. Enforcement of water rights and handling of complaints are areas that the Water Resources Division's Regional Offices deal with each year. Issues range from too much water in a wet year to not enough to go around in dry years. Along with the general increase in complaints to handle, there were also situations that had unusual solutions or ideas to try to address with the problem. Several regional offices had these situations to deal with this year.

The Lewistown Office worked with the Deptartment of Fish, Wildlife and Parks (DFWP), the local conservation district, and the Helena Central Office to identify and contact water users on the Smith River to try to reduce diversions to help with severely low streamflows. The users did respond, albeit with some reservation, and flows in the river did increase. Directly contacting the users is a role the regional office had not played before in this type of situation.

The Bozeman Office also worked with DFWP to identify water users on the East Gallatin River which was being severely dewatered. In this case DFWP made the contacts on its own to try to get voluntary reductions in use. It is unknown whether there was any success in this case.

The Governor's Executive Order to simplify the process for changing a water right for temporary instream use was an innovative thought, but did not get any takers officially. However, it may have raised awareness of the problem and prompted some voluntary reductions in water use.

The Kalispell Office responded to a complaint that the county was using water for dust abatement without a water right. Typically this would be viewed as a violation, but, with smoke from the extensive fires this year creating health concerns, it was decided that it was reasonable to consider this use an emergency appropriation as long as a Level II or higher air alert was in effect. Dust abatement has not traditionally been considered an emergency use – only direct fire suppression has.

Lower than normal groundwater levels in various areas of the state prompted concerns and in some cases accusations of waste of the resource. More eyes also seemed to be watching the water users around the state. Calls were received from concerned citizens, adjacent landowners, and affected water users as to the effectiveness or efficiency of some water users' distribution systems. Waste of water to one person is just "that's how it's been done for a very long time" to another, which is a difficult issue to try to address' especially under low water conditions.

This season was very trying for many and there were probably a few of us that wish it had been water that was actually hitting the fan!

"Normal" Winter...
(Continued from page 4)

should be in place by December 1, and 50 percent by January 10.

Drought commentators often note that it is difficult to know whether a region is in the midst of a drought until some time after it has started. Today, I think it is safe to state that we are in a period of drought. Witness the problems a number of Montana municipalities have had recently supplying customers with a dependable supply of potable water. Scores of wells across the heartland of the state that have been dependable for stock water and domestic use for decades are now dry or intermittent. Even our storage reservoir safety net, replenished from 1996 through early 1998, has slipped, with prospects uncertain for the near term.

Recently, I was asked what it would take to end the drought. The absence of snowstorms at prairie and valley floor elevations for the past three winters was a major factor in the making of the current drought. Montana needs four snowstorms across the central and eastern two-thirds of the state this winter to replenish soil moisture and recharge the aquifers, followed by average or above precipitation through June.

According to the NWS Climate Prediction Center, the official winter forecast for Montana calls for near normal temperatures and precipitation with three or four significant cold arctic intrusions, and more snowfall in the mountains and across the plains. Areas east of the divide have a good start on moisture recovery at lower elevations with the big storm of November 8-10. Now all we can do is hope and pray that Mother Nature is kind to us this winter.

EMERGENCY ACTION PLAN VERIFICATION FOR DAMS

By Tom Sanburg

The DNRC Dam Safety Program is responsible for regulating over 90 high-hazard dams. To be classified as high-hazard, a probability of loss of life in the event of a dam failure must exist. The owner of each high-hazard dam is responsible for developing an emergency action plan to be used as a response guideline if the dam fails or sustains damage.

Tom Sanburg was recently hired by DNRC to review, evaluate, and verify that emergency action plans are up-to-date and effective. To accomplish this, the plans are put through the following three–phase review process:

Phase 1. Plan Review
Phase 2. Plan Modification
Phase 3. Plan Testing

Phase 1. Plan Review.
The plan is read from start to finish to ensure that a layman can understand and use it. These plans are used by a variety of people including county sheriffs, Disaster and Emergency Services (DES) personnel, local engineers, and dam operators, as well as state dam safety personnel. Chapter 14, Sub-Chapter 4 of the *Administrative Rules of Montana* is used as a guideline to make sure that all required elements are included in each plan. Notification flow charts are reviewed to make sure that the correct agencies are included in the notification chain, and evacuation maps are reviewed to ensure that they are current, clean, and easy to use.

Phase 2. Plan Modification.
All comments from the plan review process are sent to the dam owner to be integrated into the plan. The dam owner will usually coordinate the plan changes with the local DES coordinator and county sheriff so that all three are in agreement before changes are made. The dam owner is responsible for reviewing the plan annually and sending change pages to all parties that keep copies of the plan.

Phase 3. Plan Testing.
Exercise scenarios are developed to evaluate the effectiveness of the plan and the ability of agencies to use it. The most commonly used form of an exercise is a *tabletop*. Other forms of exercises include *drills*, *functional exercises* and *full-scale exercises*. In a *tabletop*, pertinent agencies are represented in an informal conference room setting. A situation narrative is presented with maps and charts, etc. The participants are evaluated on steps that they take in response to inputs from exercise simulators. Individuals are encouraged to discuss decisions in depth, and the emphasis is on slow-paced problem solving rather than rapid, spontaneous decision making. A *drill* tests the function of one element of the response system. An example of a drill is a test of an early warning notification system. A *functional exercise* is used to test the coordination of the emergency management system under conditions of realism and stress. The functional exercise gives participants a fully simulated experience of being in a major disaster. A functional exercise requires activation of a real or simulated emergency operations center. This may be done using actual communications systems or using a portable telephone system that can be set up in a large building. In a *full-scale exercise*, agencies actually deploy response teams and simulate evacuations and/or treatment of casualties, depending on the scenario. A full-scale exercise is very expensive and requires much interagency coordination.

The DNRC Dam Safety Program plans to review at least 20 emergency action plans per year. Several exercises will be conducted each year on an adhoc basis. The exercises will be conducted in a crawl, walk, run progression, starting with orientation seminars and tabletops in preparation for functional and full-scale exercises.

Questions about emergency action plans for dams can be directed to Tom Sanburg at (406) 444-9362.

MONTANA WATER TRIVIA

Which of the following is the largest river in Montana: the *Kootenai, Clark Fork, Missouri* or *Yellowstone River*?

Answer: The Clark Fork River

MONTANA DISTRICT JUDGE TO RETIRE

Judge Rodeghiero

By Cindy Forgey

Judge Roy C. Rodeghiero was born in Roundup, Montana, on March 28, 1936. He graduated from Klein High School in 1954. In 1958 he graduated with a Bachelor of Arts degree in business administration from the University of Montana in Missoula. He furthered his education by graduating in 1961 from the University of Montana Law School with a Juris Doctor degree.

After graduation he practiced law in Roundup, Montana, for over 20 years, during which he was also elected and appointed as county attorney for Musselshell and Golden Valley Counties for the past 15 years. Since 1985 he's also been serving as one of Montana's five water judges.

In January 1983 he was elected as district judge for the Montana Fourteenth Judicial District Court. He still holds this position, but has plans to retire at the end of this year.

Judge Rodeghiero believes that Montana's two most important resources are its youth and its water. He believes that we should concentrate on keeping our young people employed and living in Montana and using Montana's water for Montana first, before it's appropriated by the states downstream. Some years ago Judge Rodeghiero worked on the Bean Lake water case, which in his mind provided for the broadest legal uses for which Montana water could be appropriated. On an appeal, the Montana Supreme Court restricted the uses for which water could be appropriated. Court rulings and state legislation restricting Montana's water use and appropriation have been of serious concern to him, where Montana's waters are lost to downstream states.

This past summer, as district judge, he appointed two water commissioners on the Musselshell River below Deadman's Basin to distribute basin water released for irrigation and other purposes. With the drought this past year, the judge feels that this worked well, with everyone getting his or her water from the limited supply. He feels that, in future years, Montana will see more water commissioners on its streams to ensure the orderly, efficient, fair, and timely distribution of water for irrigation and other purposes. It is always important that Montana water be used efficiently, and this becomes more critical in drought years.

On a lighter note, the judge tells the water users that he court orders rain and snow for Montana's water supply on a regular basis. "It always works, and the water supply is always replenished." However, he does not have the timing down to perfection yet, as the rain and snow are sometimes months late for the season's use. Praying for rain is probably more productive.

Water has always been and will always be Montana's lifeblood. It should be used fully, with the highest efficiency and benefit, and never wasted.

Judge Rodeghiero and his wife Janet live on the family ranch near Roundup where they've raised six children.

Congratulations and best wishes to Judge Rodeghiero on his retirement!

NEW!

WEBSITE FOR MAPPING

The Montana Natural Resources Information Center (NRIS) has developed a website called "Topo Finder." This site is very helpful if you need to make a strip map showing the location and topography of a dam site. It allows you to find a location by inserting the location name, quadrangle map name, grid coordinates, or section, township, and range. The position of the topographic map plot can be moved or magnified to get a better view. The maps can be printed in color with a quality comparable to that of USGS topographic maps. The web site is: *http://nris.state.mt.us/topofinder.html*

WATER RESOURCES DIVISION EMPLOYEES RECOGNIZED

By Cindy Forgey

On August 24, 2000, an awards ceremony was held in Memorial Park in Helena to recognize DNRC employees. Many Water Resources Division employees were recognized for their outstanding performance and longevity.

Jane Horton was given the Administrator's Award for her efforts and professionalism in conducting all of the research and authoring the baseline report for the Badger Creek Conservation Easement.

Special Recognition plaques were given to Jim Domino for his environmental and permitting work, to Julie McNichol for her leadership and initiative in overseeing the water rights database migration project, to Kirk Waren for his development and implementation of the Powder River Controlled Groundwater Area, and to Milt Popovich for his expertise and dedication in providing computer assistance to the division.

Certificates of Appreciation were given to Bob Clark, Art Taylor, John Sanders, Anne Yates, Charlie Atkins, Gayle Phillips, and Shannon Voss.

Longevity awards were given to Mike Lesnik for 5 years of service; Brian Carroll, Mike Sims, Karl Christians, Kurt Hafferman, Wes McAlpin, and Gerald Reddig for 10 years of service; Illa Phillips for 15 years of service; Ron Roman, Mike McLane, Bob Arrington and Linda Molina for 20 years of service; Pat Boggess for 25 years of service; and Johng Kim and Laurence Siroky for 30 years of service.

Bud Clinch and Jack Stults present an award to Kurt Hafferman - Photo by Milt Popovich

CONGRATULATIONS TO EVERYONE FOR A JOB WELL DONE!

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WATER LINES

NEWS FROM THE WATER RESOURCES DIVISION
OF THE MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

WATER NEWS

LEGISLATURE CONSIDERS WATER ISSUES

By Cindy Forgey

THE 57TH SESSION OF THE MONTANA LEGISLATURE BEGAN WEDNESDAY, JANUARY 3, 2001, AND CAME TO A CLOSE ON APRIL 21, 2001. FOLLOWING ARE SOME OF THE BILLS RELATING TO WATER ISSUES THAT THE LEGISLATORS PASSED THIS SESSION.

HB 33 - An act authorizing a short-term lease of a water right for road construction or dust abatement without approval by the Department of Natural Resources and Conservation; amending Sections 85-2-122, 85-2-402, 85-2-407, and 85-2-419, MCA; and providing an immediate effective date. Governor Martz has signed this bill.

HB 46 - An act increasing the limit for construction contracts without formal competitive bids for state-owned water projects to $50,000; exempting the Department of Natural Resources and Conservation from specific solicitation and selection procedures for contracts up to $15,000 for goods, nonconstruction services, or professional services related to state-owned water projects; amending Section 85-1-219, MCA; and providing an immediate effective date. Passed by the legislature. Governor Martz has signed this bill.

HB 114 - An act generally revising the Montana water use laws; defining "developed spring"; eliminating the requirement to make water right application forms, notice of completion forms, and well log forms available at the offices of county clerks and recorder; clarifying that notification of intent to appropriate ground water from ground water development works does not create an easement; amending Sections 85-2-102, 85-2-302, 85-2-306, and 85-2-516, MCA; and providing an immediate effective date. Governor Martz has signed this bill.

HB 129 - An act exempting certain replacement wells from certain procedures and criteria applicable to changes in water rights; amending Section 85-2-402, MCA; and providing an immediate effective date. Governor Martz has signed this bill.

HB 340 - An act revising the provisions governing the contents of local subdivision regulations; requiring the subdivider to reserve water rights or establish a landowner's

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water use agreement for certain subdivisions; establishing minimum width requirements for ditch easements in subdivisions; prohibiting placement of structures or planting of vegetation within ditch easements without permission; requiring the subdivider to show utility easements of sufficient width to provide utility services on the final plat; and amending section 76-3-504, MCA. Governor Martz has signed this bill.

HB 397 - An act establishing the Clark Fork River Basin Task Force; requiring the task force to develop a water management plan for the basin; requiring the task force to submit interim reports to the governor and the legislature; requiring the Department of Natural Resources and Conservation to provide a written notice when the department issues water use

(Continued on back page)

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION — WATER RESOURCES DIVISION
"To provide the most benefit, through the best use, of the state's water resources for the people of Montana."

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THE NORTH FORK BLACKFOOT RIVER STUDY

By Mike Roberts

A study conducted by the Montana Department of Natural Resources and Conservation (DNRC) and the U.S. Bureau of Reclamation (USBR), with assistance from the U.S. Geological Survey (USGS), assesses the current hydrology of the North Fork Blackfoot River in its lower reaches. The North Fork Blackfoot River contributes about one-third of the annual discharge of the Blackfoot River while occupying approximately 15 percent of the Blackfoot River watershed area. This contribution and the demand for this water make it imperative to have an understanding of the hydrology of the area and how it interacts with multiple land uses. Reaches along the lower river and some of its tributaries experience seasonal water shortages that may impair native trout habitat for westslope cutthroat and bull trout and affect irrigators' ability to use water. The study characterizes the general hydrology of the area and focuses on natural and anthropogenic factors that may impact surface water and groundwater interactions and ultimately instream flows of the North Fork Blackfoot River and its tributaries Rock Creek, Kleinschmidt Creek, and Salmon Creek.

The headwaters of the North Fork Blackfoot River lie in the Scapegoat Wilderness on the Lolo National Forest. The river flows south out of the wilderness area, where it immediately dissects a glacial outwash plain for several miles before entering a confined valley section above its confluence with the Blackfoot River. It is on this outwash plain, known as Kleinschmidt Flat, that the study was conducted, and it is also where most off-stream water use, specifically irrigation, occurs in the basin.

North Fork Blackfoot River - Photo by Mike Roberts

With the cooperation and support of landowners, the agencies characterized the hydrology on Kleinschmidt Flat through the monitoring of area inflows and outflows, surface water in all streams and diversions, and groundwater levels at many of the private residences. By taking flow measurements at several points along streams and ditches, the agencies identified specific reaches that lose or gain flow as a function of groundwater interaction. These measurements or "synoptic" runs were conducted periodically throughout the irrigation seasons during the life of the project, 1997 to 2000.

Study results indicate what area residents have long suspected. The North Fork Blackfoot River, Rock Creek, Salmon Creek, and most of the irrigation ditches lose large amounts of surface-flowing water into the permeable soil in the upper three-quarters of Kleinschmidt Flat. However, much of that water returns to Rock Creek, Kleinschmidt Creek, and the North Fork Blackfoot River in the lower one-quarter of Kleinschmidt Flat. The considerable amount of return flow observed results primarily from inefficient irrigation delivery systems and instream flow losses due to seepage. Improvements to some of these delivery systems may lead to localized water savings and, eventually, the enhancement of instream flows.

It is anticipated that this study will provide a quantifiable platform on which landowners and other stakeholders can base water management decisions. The key is to maintain or increase instream flows in critical reaches without diminishing presently irrigated lands.

The study is presently in review and will be available from DNRC in the spring of 2001.

PARK LAKE DAM CONSIDERED FOR REPAIR

By Tim Kuehn

The Department of Natural Resources and Conservation (DNRC), Department of Fish, Wildlife and Parks (DFWP), and the U.S. Forest Service (USFS) have jointly established a tentative agenda to repair Park Lake Dam. Rob Kingery, a DNRC engineer, has been coordinating efforts with the agencies in an attempt to arrange geotechnical analysis and repair of the aging structure.

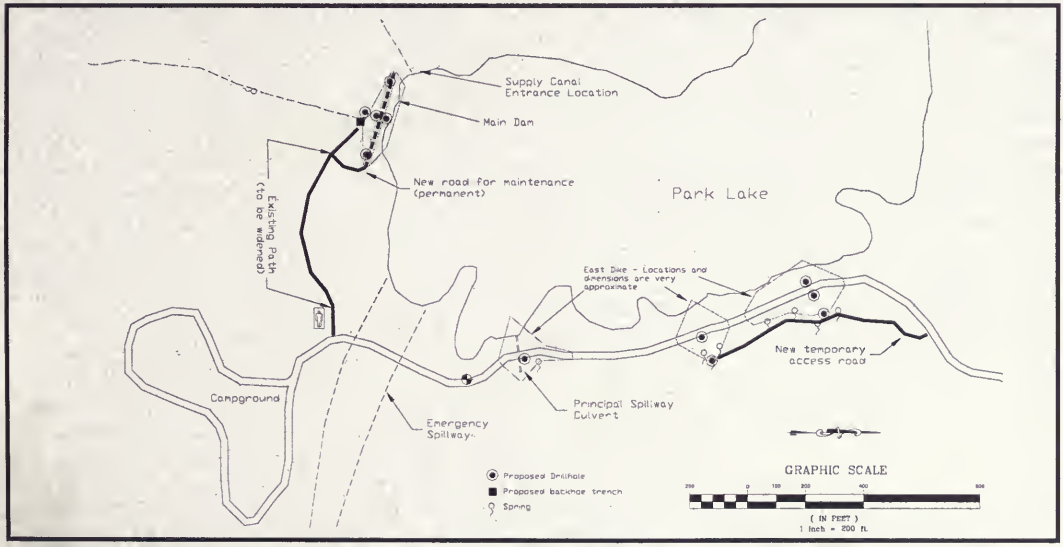
Park Lake is located in the Boulder Mountains approximately 12 miles west of Clancy in Jefferson County. The dam was originally constructed in 1872 by the Park Ditch Co. to provide water for placer mining in the Helena area. The structure is an earthen embankment that impounds 225 acre-feet of water and is classified as high hazard due to the potential loss of life should the dam breach. Several problems at the site need to be addressed. Fill material around the spillway culvert has piped from the area and allowed the culvert to settle. The downstream embankment appears to be unstable, and the upstream embankment has been eroded from wave action. Additionally, there is evidence that an abandoned outlet pipe may be buried in the embankment. Detailed design and construction information about the dam is not available.

The reservoir is owned by DFWP and entirely surrounded by the Helena National Forest. A public campground located near the reservoir is owned and operated by the U.S. Forest Service. The popular recreational site is stocked with cutthroat trout annually by DFWP. Arctic grayling were planted several times between 1963 and 1970, and now the grayling fishery maintains itself by natural reproduction. The DFWP and USFS have entered into an agreement to exchange certain parcels of property to improve management and administration activities. Upon completion of the land exchange and repair of the dam, Park Lake will be owned by USFS.

The plan for repairing the structure consists of two phases. The first phase includes bathymetric and topographic surveys, drilling to obtain geotechnical data, and the development of a preferred repair work alternative. The second phase includes the final project design, development of construction bid documents, and construction administration.

Jim Domino, DNRC environmental specialist, is preparing the necessary permit applications and environmental documents in coordination with DFWP and USFS. It will be necessary to prepare an environmental assessment for each phase of the proposed work. The EAs will be made available to the public for review and comment.

The 57th Montana Legislature is being asked for $175,000 to fund the project.



DRY PRAIRIE RURAL WATER

(Taken from *Dry Prairie Rural Water* brochure)

In 1992 the Fort Peck Tribes realized poor quality water on the reservation was a concern. Work began on a water supply system to bring clean water to the reservation.

As the plan progressed, it became evident that all of northeastern Montana was suffering from poor water contaminated with minerals, rust, odor and high nitrates. A regional water system was suggested, combining the tribal plan with an off reservation system, thus consolidating systems and cutting construction costs.

The off reservation communities organized and formed the Dry Prairie Rural Water. By working together, high quality Missouri River water will be treated to become compliant with the national safe drinking water standards, and brought to existing public water systems, rural households, and livestock watering sites across northeastern Montana.

Water rights from the Fort Peck Tribes will be allocated for the projects. There is an average of 7.5 million acre-feet flowing past northeastern Montana in the Missouri River every year. Of that water, the Fort Peck Tribes own the rights to one million acre-feet. The regional water system will use between 4,000 and 5,000 acre-feet annually. The rights will be disbursed at no cost for the life of the system.

The water intake will be located near Poplar, Montana, with the treatment plant close by. After the water has been treated, it will be pumped through approximately 3,500 miles of pipeline with 52 pumping stations. The system will serve approximately 24,000 people.

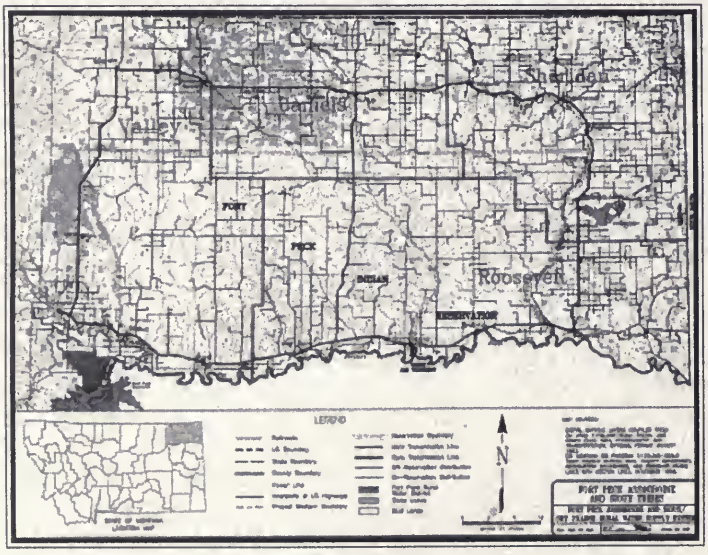
Dry Prairie Rural Water will own and operate the system off the reservation, and the Fort Peck Tribes will operate the system on the reservation. The common facilities such as the intake and treatment plant will need to be governed by a common board. The system on the reservation is owned by the federal government and held in trust for the Fort Peck Tribes.

Construction cost of the system is estimated at $179 million: $103 million for the Fort Peck Reservation and $79 million for the Dry Prairie Rural Water system. Legislation states the reservation system will be 100% federally funded with the Dry Prairie Rural Water system 76% federally funded. State grants, loans, user fees and legislation will provide the remaining 24% cost of the construction for the Dry Prairie Rural Water system.

Annual cost of operation and maintenance of the system is estimated at $2.86 million. Operational funds for the Dry Prairie Rural Water system will be included in the monthly water bill, estimated at $39.80 for the average residential user. Estimates are based upon operation, maintenance, and debt service of comparable systems.

Rural users are urged to join the system before the final design is completed. Users who are designed into the system will enjoy a 76% federal and 12% state cost share of construction. There is a $100 good intent fee required to sign up and be included in the planning. A hook-up fee of approximately $500 will be needed when the construction is in your area.

Users who wait until construction begins will pay a full cost of trenching from the main pipeline to their location and be responsible for some debt service. This cost cannot be



(Continued on back page)

Spring 2001 – Lamb or Lion?

By Jesse Aber

April 2001 entered with a big roar and we are finally getting some significant snow accumulation for our mountains. After all, in 1996 and 1997 snow water content climbed through the second week of May, well past the 30-year average peak, which occurs about April 12 each year. A colder than average winter preserved what snow we did get for months. So far, April has come through for us and pushed the faltering mountain snowpack in a number of basins to, and beyond the 70 percent of average mark.

Everyone seems to agree that the drought continues, relatively unabated. The Drought Advisory Committee decided that there is no need to make a new case for the presence of drought conditions across the state in its March 21 meeting in Helena. Through March, aquifers, soil moisture, reservoirs, streamflow, and precipitation continued to languish. The committee agreed to send a letter to all 56 Montana county commissions announcing a Drought Alert. The Alert calls for encouragement of local drought planning. The Drought 2001 Internet web site contains the drought plan and responses suggested for the Drought Alert status. See the website at *bttp://nris.state.mt.us/drought*.

The USDA Natural Resources Conservation Service (NRCS) Snow Survey for April 16, 2001 indicated that the snow water content of the state's mountain snowpack stands at about 68 percent of average west of the Continental Divide and 72 percent east of the divide. The April 1, 2001 NRCS Surface Water Supply Index (SWSI) ranked 36 of 52 river basins in the Extremely Dry category. The SWSI maps, as well as a myriad of other drought-related data, are located on the Drought 2001 web site.

March turned out to be another poor precipitation month for low elevation locations across Montana with the seven climate divisions ranging from a low of 13 percent for the northeast division to a high of 101 percent for the southeast division. West of the Continental Divide, March precipitation was 73 percent of normal. For the Water Year, October 1, 2000 through March 31, 2001, the southeast division led the state with 101 percent of normal and the western and south-central divisions trail the rest of the state with 69 percent of normal precipitation. The southwest, central, northeast, and southeast divisions were within the normal range of 90 to 110 percent precipitation for the Water Year, thus far.

According to the National Weather Service, April precipitation statewide has been average to above average through the 16th of the month. The southeast climate division received 135 percent of average precipitation, the north central and western divisions were 156 and 141 percent of average, respec-tively, through the first one-half of April. The southwest, north-east, and south central divisions received 95, 170, and 137 percent of the long-term average for moisture for the period, and the central division received 133 percent of average moisture.

March went out and April came in like lions in the mountains. Snow water content figures responded by gaining, on average, about 15 percent statewide between March 26 and April 16. Frequent mountain snow flurries added still more percentage points during the week of April 15.

Thirteen of seventeen river basins reached or exceeded the 70 percent level that has been so elusive all winter. As of April 16, the Headwaters Missouri Mainstem basin leads the state with 83 percent of average snow water content in the mountains. The Smith, Judith, Musselshell, and Flathead River basins follow with 81 and 75 percent. A cool and wet April and May could cause a protracted period of runoff to soften the blow of the low water content of the mountain snowpack. And with above average precipitation in April, May, and June, we could see range conditions and soil moisture recover and streamflow and reservoir storage improve.
Of course, we are not planning on the best-case scenario, or for that matter, even average moisture. So, here at the threshold of another Montana spring and summer we find ourselves in a precarious position once again. Hopefully, April's Lion will roar its way well into the month of May.

EARTHQUAKES AND DAM SAFETY

By Laurence Siroky

Although we did not feel the ground moving during the Seattle earthquake on February 28, 2001, we did feel the quake with respect to evaluation of our own readiness. The DNRC is responsible for ensuring that owners of high hazard dams are ready and know the appropriate action to take if an earthquake occurs near the dam.

High hazard dams are dams that have a capacity of 50 acre-feet or more and would cause loss of life downstream if they fail. The term "high hazard" is not a description of the physical condition of the dam itself but rather of the hazard potential downstream. Each dam owner is required to have, and now has an emergency action plan for both an imminent failure and a failure of the dam. Failure would, of course cause, fatalities and considerable downstream damage, as well as the loss of the facility that provides water for drinking or irrigation. However, warning times of more than an hour and half historically have resulted in minimal loss of life from a dam failure. So, implementing the emergency action plan is an important step for early warning.

One of the programs we have implemented recently is to work with dam owners, disaster officials, and others to ensure that the emergency action plans are up-to-date and usable. The plan lists the appropriate notification sequence, emergency phone numbers, and actions required of the dam owner and others to implement an emergency action effectively. We are actively conducting practice sessions, called tabletop exercises, with dam owners and other responsible officials. The tabletop exercise usually results in improvements to the plan as well as familiarization with the plan. A tabletop exercise is done about once every three to four years. Additionally, the department is auditing about one-third of the 90 emergency action plans for the high hazard dams each year to ensure that phone numbers and official contacts have been updated.

One important consideration is to determine which dam owners need to be notified when the shaking has been strong enough to warrant an inspection of the dam structure or, in the most severe case, an evacuation. We have just completed an evaluation of the latest scientific information on attenuation of earthquakes, that is, how much the shaking caused by an earthquake dissipates with distance from the epicenter. The attenuation information is then used to search our list of dams, and a list is developed of dams located where the degree of shaking may be of concern to the structural integrity. Based on that list, dam owners are notified and given a recommended course of action.

Dam owners are required by law to build and rehabilitate high hazard dams utilizing the latest design and materials to minimize the risk of dam failure during the design earthquake. To most dam owners, complying with these standards seems to be awfully expensive, in anticipation of a rare event. The Seattle quake is a reminder that the design earthquakes do occur. Although the depth at which the Seattle earthquake occurred minimized the damage that resulted, adequate construction and design of the buildings and infrastructure played a huge part in minimizing damage.

Montana is seismically active - not quite as active as areas in California, but similar to Washington. Therefore, adequate construction of dams and readiness are important to all who live below a dam or depend on the water storage. The issue is not whether an earthquake will occur, but when it will occur and whether we are READY.

MONTANA WATER TRIVIA

What is the one place in North America where falling water eventually flows into three oceans?

Answer: Triple Divide Peak in Glacier National Park

ALAN MIKKELSEN - A NEW FACE IN WASHINGTON

Alan Mikkelsen

By Cindy Forgey

Alan Mikkelsen's first memory of water was of riding on his father's shoulders, water-skiing across a local irrigation reservoir. He says that was followed by memories of playing in irrigation ditches and canals, which were eventually replaced by gravity-pressurized sprinkler lines on his family farm/ranch near St. Ignatius.

Alan is a fourth-generation Montana farmer/rancher; he was born and raised near St. Ignatius. He and his wife Lynette, a math and chemistry teacher in St. Ignatius High School, raised their three children there. In 1998 they sold their ranch and moved onto a smaller piece of property next to the old ranch, where they spend their time gardening and where Alan enjoys working in his woodshop.

Alan's professional activity in water issues began when he was asked to run for a vacancy on his local irrigation district board of commissioners. From there he went on to serve as executive director of the Flathead Joint Board of Control in western Montana from 1986 to1995. At the same time he began to work with water users across Montana and the U.S. in several capacities.

Alan has served on the boards of the Montana and National Water Resources Associations, and most recently as the treasurer of the National Water Resources Association. He has also been active in dispute resolution and mediation of natural resource disputes and represented a variety of water organizations in Washington, D.C. His home office is filled with awards from state, regional, and national water organizations for the service he has rendered to water users over the past 15 years.

Alan also ran a natural-resource-based flying service from St. Ignatius, doing work from Barrow, Alaska, to Belize in Central America. In 1993, he was named the International Conservation Pilot of the Year.

In April 2000, he was asked to take over Dennis Rehberg's campaign for the U.S. House of Representatives. After a successful election, Alan was asked to serve as Congressman Rehberg's Chief of Staff, which he is currently doing. Alan says the best analogy to describe his current position is, "It's like trying to drink out of a fire hydrant!"

Alan sees the most challenging water quality issues for Montana as TMDLs and nonpoint source pollution, especially as these issues relate to agriculture and forest management practices. Congress will also be involved in these issues, and Congressman Rehberg's position as vice-chairman of the Water and Environment Subcommittee means that we will be intimately involved and will be able to make sure a Montana perspective is developed.

The most challenging water quantity problem is just plain lack of snowpack. Montana is facing a year of water shortages for fish, farmers, and hydroelectric plants. The Drought Advisory Task Force, chaired by Lt. Governor Karl Ohs, is doing everything it can to mitigate this problem. Alan hopes that we can keep talking to each other as Montanans and continue a civil discourse for the ultimate good of the resource.

Alan thinks that the continuing drought will be the most challenging issue of the next ten years. After that, the implementation of Indian right water settlements and the financing and development of rural drinking water delivery systems will definitely be the major issues in Montana.

WATER LINES On-Line

Be sure and visit our Web Site at *http:/www.dnrc.state.mt.us/wrd/home.htm* for information and data regarding water and water-related issues. You'll also find a link to stay updated on the 2001 drought conditions. Our Web Site is continually being updated so check it out.

(Dry Prairie continued from page 4)

estimated, however, it may be cost prohibitive.

All communities in northeastern Montana have made a commitment to bring clean water to their residents. This is your opportunity to show your support.

The Dry Prairie Rural Water System originated from a steering committee in 1997 to an association of conservation districts formed to govern the off-reservation water system in 1998. The association board consists of two members from each county who conduct the business of the system. Any of these board members may be contacted for more information.

BOARD MEMBERS

Valley County
Dennis Hanrud 725-3374
Allen Bunk 746-3483

Sheridan County
Jon Bolstad 963-2325
Gordon Kompen 286-5684

Daniels County
Charlie Cahill 783-5510
Jim Tande 783-5211

Roosevelt County
Miles Knudson 787-5252
Rick Knick 787-5250

Dry Prairie Rural Water
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406-787-5382
E-mail: dprw@nemontel.net
Website: www.nemontel.net/~dprw

(Legislature continued from page 1)

permits in the Clark Fork River basin; specifying the contents of the written notice; and providing an immediate effective date and a termination date. Governor Martz has signed this bill.

HB 573 - a bill for an act entitled: "An act authorizing the board of oil and gas conservation to permit certain coal bed methane gas wells; providing requirements for the permitting of wells; and providing contingent effective date." Governor Martz has signed this bill.

If you are interested in learning more details about a particular bill, such as sponsor(s) and language, get online at www.state.mt.us or call 1-800-962-1729.

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WATER LINES

NEWS FROM THE WATER RESOURCES DIVISION
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DEPARTMENT NEWS

The Jefferson River Watershed Council: Help for the "Forgotten Fork"

By Dave Amman

The Jefferson River is one of Montana's most overlooked river resources. Unlike its upstream neighbors, the Jefferson doesn't get much attention from the anglers that crowd the Beaverhead, Ruby, and Big Hole rivers, which meet to form the Jefferson near Twin Bridges. Farther downstream at Trident, the Madison and Gallatin rivers join the Jefferson to form the Missouri River. In the company of these legendary trout streams, the Jefferson has been referred to as the "Forgotten Fork."

However, this may be slowly changing. In June 1999, a group of concerned citizens, sportsmen, irrigators, members of conservation organizations, and agency personnel met in Twin Bridges to discuss the formation of a watershed group that would examine and address the issues that have kept this river from reaching its potential. The group, now named the Jefferson River Watershed Council (JRWC), met a few more times last summer, and since October 1999 has held meetings on the fourth Wednesday of every month. Several government agencies, such as the NRCS, DFWP, MSU Ag-Extension, DEQ, and DNRC, are involved as technical advisors.

Jefferson River - Photo by Dave Amman

The JRWC has chosen to focus attention on the river from Twin Bridges downstream to just past the Waterloo Bridge. This river reach experiences the most frequent and severe dewatering and associated thermal problems. Concerning fisheries, the DFWP estimates that the optimal low flow near the Waterloo Bridge is about 1,000 cfs. But in 1994, flows dropped to less than 20 cfs, and fish populations plummeted for the next several years. According to DFWP Fisheries Biologist Ron Spoon, populations are beginning to stabilize, due in large part to three years of favorable flows. Currently, however, river flows are very similar to the crippling 1994 conditions.

The possibility of drought conditions this summer became apparent early this year, when snowpack data revealed below-average snow water equivalent. So, for its first project, the JRWC chose to create a Drought Management Plan. The plan is patterned after the Big Hole Watershed Committee's drought plan. Like the Big Hole plan, the Jefferson plan asks for everyone to "share the shortage." The plan is based on flow levels measured at the USGS stream gage near Twin Bridges and a stream gage installed near the Waterloo Bridge by DNRC's Water Measurement

(Continued on page 2)

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION — WATER RESOURCES DIVISION
"To provide the most benefit, through the best use, of the state's water resources for the people of Montana."

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MONTANA WATER RIGHTS AND YOU

By Kim Overcast

In December 1999, the Montana Water Court issued the Preliminary Decrees for basins 40Q – Poplar River and 40S – Missouri River below Fort Peck. Several Eastern Montana county conservation districts sponsored public meetings to help provide information on Montana's ongoing water right adjudication program and various other water related issues. The meetings were held in Wolf Point, Culbertson, and Sidney.

Montana's Chief Water Judge, C. Bruce Loble, spoke about the adjudication process at both the Wolf Point and Culbertson meetings. All the meetings were well attended, and many ques-tions were answered by DNRC staff.

Topics on the agenda included a history of water rights in Montana, the operation of the Montana Water Court and the adjudication process, the requirements for obtaining new water rights, the availability of conservation District water reserved for irrigation, maintaining current water right ownership in Montana's records, and Vision 2005 – Irrigation Development and Funding.

Following the meetings, DNRC staff assisted numerous water users with questions on their individual water rights.

If you would like to discuss the possibility of having a similar meeting in your area, contact your local conservation district office or Water Resources Regional Office.

Water Rights and You Workshop *- Photo by Kim Overcast*

(Continued from page 1)

Program. Water-temperature monitoring stations have also been installed in the critical river reach.

The Jefferson Drought Management Plan is a work-in-progress. Details are still under discussion. We are currently monitoring the river in anticipation of implementing the plan very soon and gathering data to further refine the plan. The goal for this year is to maintain enough instream flow to avoid a fish population crash like the one brought on by the 1994 drought.

For the fourth year, the Water Measurement Program is assisting irrigators in the upper Jefferson Valley to measure their diversions. This includes the installation and rating of measuring devices so that irrigators can monitor their own diversions. It is a voluntary effort that provides important information to irrigators, especially in dry years such as this.

The Water Measurement Program is also studying canals in order to determine seepage losses and, with assistance from the Jefferson Valley Conservation District, has obtained a portable flow meter available for irrigators to measure their own diversions.

Dave Amman is a hydrologist and is the program manager of the DNRC Water Measurement Program.

Water Lines Now Available on Web!

Water Lines can now be accessed on the Web at: **www.dnrc.state.mt.us/wrd/newsletters.htm**
We will be developing an e-mail address list to notify readers when the newest issue of *Water Lines* has been posted on the Web.

If you prefer to be on our e-mail notification list, rather than our mailing list, please send your e-mail address *with a message stating you would like to be notified to:* cforgey@state.mt.us.

Embankment and Alluvial Dike Completed at Tongue River Reservoir

By Jim Domino

Work was completed on an embankment and alluvial dike at Tongue River Reservoir on May 15. The 1,200-foot long structure was constructed to reduce sub-surface water seepage into the North Decker coal mines. The increased water seepage was the result of the Tongue River Dam Rehabilitation Project, which raised the reservoir level four feet.

The dike is functioning as planned and has reduced by two thirds the sub-surface seepage into the North Decker mines. Last spring, as the reservoir was filling, water seepage increased to 18,000 gallons per minute and created a public safety hazard due to severe headcutting that occurred at the east end of the open coal pit. The water seepage far exceeded the anticipated flow rates and was beyond the water pumping resources of Decker Coal. With the dike in place, seepage has been reduced to approximately 6,000 gallons per minute, within Decker's pumping capabilities.

Included in the project were the placement of several vegetative bundles and the construction of riprap barbs along the face of the dike to provide additional fisheries habitat.

The presence of a great horned owl nest just outside of the dike construction zone presented an additional challenge to State Water Projects Bureau staff and Decker work crews. The U.S. Fish and Wildlife Service indicated that disturbance of the owl nest could constitute a violation of the Migratory Bird Treaty Act. The Northern Cheyenne Tribe also expressed concern due to the owl's religious significance. In order to prevent any disturbance, construction activity was kept to a minimum near the nest. In addition, the cut-and-fill activity was planned to move progressively toward the nest location. This was done to allow the owls to become accustomed to the increased activity.

Decker Dike looking southeast *- Photo by Art Taylor*

The owls were monitored daily by State Water Projects Bureau staff throughout the duration of the project, with no disruption occurring. Bob Clark, John Sanders, and Art Tayler were on-site during the construction process to ensure that work was completed per specifications and drawings.

The total cost of the dike was $238,963, plus Decker's cost for surveying and testing. This was nearly $62,000 lower than originally estimated. The cost will be shared between the Tongue River Project sponsors. Decker Coal Company used its own equipment and crews to construct the dike, which will remain in place until mining activity in this area ends in approximately ten years.

Jim Domino is an environmental impact specialist with the State Water Projects Bureau

Montana Water Trivia

What river is the longest free-flowing river in the United States?

Answer: The Yellowstone River

STATUS OF MONTANA'S STATEWIDE ADJUDICATION

By Rita Nason

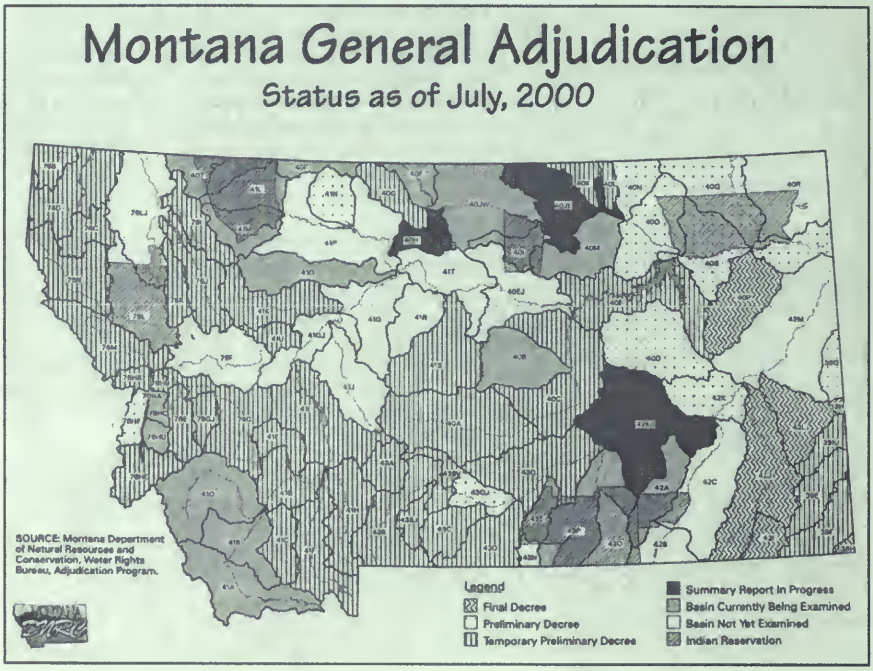
On December 29, 1999, the Montana Water Court entered its Preliminary Decrees for the Poplar River Basin (40Q) and the Missouri River below Fort Peck Dam Basin (40S). Over 2,800 water right owners in these basins were sent a notice of entry of the preliminary decrees and notice of their availability. The entire decree, including abstracts of all existing water right claims filed in these two basins, is available at the Montana Water Court, the DNRC Water Resources Regional Offices in Havre and Glasgow, the DNRC Central Office in Helena, or through the internet at www.dnrc.state.mt.us/wrd/home.htm. The deadline for filing an objection has been extended to August 25, 2000, for Basin 40S and September 25, 2000, for Basin 40Q. Objection forms can be obtained from the preceding locations.

The Montana Water Court entered its Preliminary Decree for the Rocky Boy's Compact on April 27, 2000. Notice of the entry and of availability of the decree, along with a summary of the compact, were sent to over 4,000 water right owners in the Big Sandy Creek Basin (40H), the Willow Creek Basin (41N), the Marias River Basin (41P), and the Milk River between Fresno Reservoir and Dodson Creek Subbasin (40JW). Objections to the Rocky Boy's Compact must be filed by October 24, 2000. Late objections will not be accepted by the Water Court. The Water Court held public meetings on July 11, 2000, in Shelby and on July 12, 2000, in Rocky Boy's Agency and Havre. Bruce Loble, Chief Water Judge, was present to discuss Water Court procedures, and representatives from the State, the Chippewa Cree Tribe of the Rocky Boy's Reservation, the United States, and HKM were present to explain the Rocky Boy's Compact.

As part of the Fort Belknap reserved water right negotiations, the Water Court sent a notice to all water right owners in the Peoples Creek Basin (40I). The notice was of a pretrial conference to be held in Chinook on July 13, 2000, to discuss the adoption of special procedures and the appointment of a special water master to facilitate the settlement of irrigation claims filed in the Peoples Creek Basin. Following the pretrial conference, the Water Court issued an Order granting motion for adopting special procedures and has appointed Kathryn L. W. Lambert as the Special Water Master.

The Billings Water Resources Regional Office completed it's examination of the 4,775 claims to existing water rights in the Yellowstone River between the Tongue River and Powder River Basins (42KJ). The next step in the adjudication process is the preparation of DNRC's Summary Report to the Water Court. This process began in March of this year, and the DNRC anticipates completion of the report by the end of the year.

The DNRC will soon begin preparation of its Summary Report for the Big Sandy Creek Basin (40H). DNRC's examination of claims is proceeding in three basins around the state: the Eastside and Mainstem of the Bitterroot River Basin (76HA) is 44% complete; the Teton River Basin (41O) is 24% complete; and the Big Horn River below Greybull River Basin (43P) is 10% complete. The DNRC is also re-examining irrigation claims in two basins: the Big Hole River Basin (41D) is 53% complete; and the Judith River Basin (41S) is 75% complete.



HOLLY FRANZ - A LAWYER'S PERSPECTIVE

Holly Franz

By Cindy Forgey

Holly Franz was raised in Billings, Montana. She attended Montana State University and the University of Montana law school, graduating with high honors. Holly was admitted to the Montana State Bar and U.S. District Court in 1986. She began working with the Helena law firm of Gough, Shanahan, Johnson, and Waterman, where she is a partner and represents clients on water right matters. Her clients include irrigators, power companies, municipalities, homeowners, mining companies, and anyone else with a water or ditch problem. Holly also lobbies the legislature on water right issues and acts as a mediator in water disputes.

Holly is currently the president of the Montana Water Resources Association. Other associations she's been involved with are the First Judicial District Bar Association, State Bar of Montana (Natural Resources Section, Women's Law Section, Board of Directors, Past President, and Past Treasurer), American Bar Association (Section on Natural Resources, Energy, and Environmental Law and Water Resources Committee Vice Chair), and Rocky Mountain Mineral Law Foundation.

Holly feels that the most challenging water quality issue facing Montana's today is compliance with the Total Maximum Daily Load (TMDL) law. As a result of Montana's law, recent lawsuits, and EPA's regulations, Montana has a fairly short time period in which to come into compliance. In light of the many listed streams and elusive nature of nonpoint pollution, it will be hard to satisfy the deadlines. She believes that Montana has approached this issue correctly by relying on voluntary measures. Many of the changes in management, that will be necessary to satisfy the law can come about only through cooperation of the landowners. While in the long run voluntary efforts may result in positive actions that cannot be forced through legal means, voluntary efforts take time, and we may not have enough time to get the job done.

The number one water quantity issue facing Montanans this year is drought. Drought emphasizes the water availability problems that generally face our state. In most years there is not enough water for everyone, but in drought years there is not enough water for anyone. Drought emphasizes the fact that, without any diversions from the stream, nature does not provide enough water for our needs. The true challenge to water management is how to deal with drought. While our legal system provides that first in time is first in right, during drought we often see a sharing of water to try to provide a little for everyone, including fish.

When asked about the most challenging water-related issue facing Montana in the next ten years, Holly said that she believes the demands for water will continue to increase. With existing water rights allocated for diversionary uses and for instream flows, most of our streams are fully appropriated. This has resulted in the closure of many basins in Montana.

Basin closures make water rights harder to obtain and more valuable. As water becomes more valuable, she believes we will see a greater emphasis on the enforcement of water right priorities. While many smaller streams have had water commissioners for years, the majority of Montana water users are not used to senior water users enforcing their priority dates. The Water Court has completed temporary preliminary decrees in many basins, making the appoin-tment of a water commissioner possible for the first time on previously unadjudicated streams.

The drought this year is causing many water users to look at enforcing temporary preliminary decrees. As these decrees are enforced, problems will arise. In some cases, no one objected to water right claims that are clearly at error. Montanans will be challenged as they adjust to stricter enforcement of water right priorities and as they struggle with inaccuracies in decrees due largely to lack of objections to improperly claimed water rights.

GOVERNOR PRESENTS AWARDS FOR WATERSHED STEWARDSHIP

By Cindy Forgey

Three organizations received this year's Montana Watershed Stewardship Awards: Careless Creek Watershed Project, Green Mountain Conservation District, and the Sage Creek Watershed Alliance. These organizations received the 2000 Montana Awards for Watershed Stewardship from the Montana Watershed Coordinating Council (MWCC) at a July 26 ceremony in Helena with Governor Racicot. The awards recognize innovative, locally led approaches to restoring and enhancing Montana's watersheds. The recipients of the 2000 award demonstrated measurable results; diverse, local involvement and effective collaboration; community outreach and education; and a comprehensive approach to watershed health.

The Careless Creek Project was exceptional for many reasons, but particularly for the project's long-standing service to area resources and landowners (since 1992). Careless Creek demonstrated an over all effectiveness in reducing sediment to the Musselshell River by 25 percent. The implementation of a collaborative partnership among landowners and agencies includes an effective monitoring program and comprehensive education and outreach program.

The Green Mountain Conservation District was recognized as a catalyst and supporter of six watershed councils in the Lower Clark Fork Watershed since 1995. These six watershed councils demonstrate a comprehensive approach for watershed health, relying on a "stakeholder" process for forming councils. The success of the groups has relied on technical assistance guiding restoration and conservation efforts, as well as local citizens identifying watershed concerns and formulating effective strategies to address these concerns.

The Sage Creek Watershed Alliance has proven to be an effective force through a person-to-person approach. The alliance has addressed serious water quality concerns in northern Montana by establishing clear objectives through an area-wide Conservation Plan and Water Restoration Action Strategy. These goals were pursued through an aggressive, comprehensive public outreach program.

The Montana Watershed Coordination Council (MWCC) is a statewide information and support network. The council serves as a forum that assists local watershed groups and helps enhance, conserve, and protect natural resources to sustain the high quality of life in Montana for present and future generations. The council encourages local people to take a proactive, collaborative approach to address natural resource issues and concerns. The MWCC also recognized the Upper Tenmile Watershed Steering Group, the Upper Shields Watershed Association, and the Big Otter Project for their local watershed efforts.

If you would like to know about the Council, or would like to find out more about the award recipients, you can access the website at
http://water.montana.edu

CONGRATULATIONS!

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WATER LINES

NEWS FROM THE WATER RESOURCES DIVISION
OF THE MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

WATER NEWS

WATER RIGHTS AND ROAD CONSTRUCTION

By Kim Overcast

Generally, anytime you take water out of an existing stream, lake, or ditch, you're legally required to have a water right. For contractors needing water for road construction purposes, that meant getting the approval of the Montana Department of Natural Resources and Conservation (DNRC) by applying for a new water use permit or to change an existing water right. A filing fee of $200 was required, and the time period for obtaining the water right could take up to one year.

Compliance with Montana's water use laws, as they apply to road construction and dust control, became easier with the passage of a new law by Montana's 57th Legislature. The law, House Bill 33, was signed by Governor Martz and became effective on April 27, 2001. The law allows for a 90-day lease of an existing water right without obtaining prior approval from DNRC.

The new law allows for the lease of water from an individual who holds a valid Montana water right. The law applies to diversions of water that do not exceed 60,000 gallons a day or the amount of the existing water right, whichever is less. Further, a combination of short-term leases cannot exceed 120,000 gallons a day for one project.

Thirty days prior to the use of the water, the lessee must publish a notice of the proposed use in the local newspaper. As an alternative, the lessee may mail individual notices to potentially affected water users in the area of the proposed point of diversion. The published notice or the individual notice must contain the information listed in numbers 1 through 10 and 13 below.

The lease agreement must include the following.

1. The name & address of the lessee.
2. The name of the owner of the water right.

(Continued on Page 7)

North Fork Blackfoot River Hydrologic Study Available

A hydrologic study conducted on the North Fork Blackfoot River was recently completed and is now available in report format from DNRC. The study characterizes current hydrologic conditions of the North Fork Blackfoot River and its tributaries in the Kleinschmidt Flat area. Key to the study is how natural influences, such as seepage, and human-caused influences, such as irrigation, affect the interaction between surface and groundwater resources and, ultimately, instream flows. For more information or to obtain a copy of this document, call Mike Roberts at 406-444-6641.

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THE WEST GALLATIN RIVER ENFORCEMENT

By Carol Brown and Rita Nason

When District Court Judge Tom Olsen retired from the 18th Judicial District in Gallatin County last year, Mark Guenther was elected District Court Judge. Les Aaberg, the West Gallatin River water commissioner for the last 17 years, also retired. Faced with the need to appoint a new water commissioner in an extremely dry year, Judge Guenther asked whether the Montana Water Court's Temporary Preliminary Decree for the West Gallatin River was enforceable. Unfortunately, at this time it is not. But, the Water Court and the Department of Natural Resources and Conservation (DNRC) were thrilled with the opportunity to assist a District Court, and to learn whether Montana's statewide adjudication efforts over the past 20 years are usable for enforcement purposes.

Gallatin River - Photo by Scott Compton

Carol Brown with the Water Court and Rusty Taylor with DNRC met with Judge Guenther, his administrator Dorothy Bradley, and Gallatin County Clerk of the District Court Lorraine Van Ausdol to determine exactly what was necessary. Judge Guenther needed current information on owners, flow rates, and points of diversion for the irrigation water rights out of the West Gallatin River and Baker Creek between Gallatin Canyon and the I-90 freeway. These rights were decreed in Bell v. Armstrong, Cause No. 3850, Gallatin County (1909). The commissioner would need this information for a distribution and recording program, as well as for a billing program for the amount of water distributed.

After discussions with Jim Kindle, DNRC water right data specialist, Rita Nason, DNRC adjudication program manager, and Chief Water Judge C. Bruce Loble, it was determined that the information Judge Guenther requested could be arranged into the necessary records. These records could be posted on the Internet, updated periodically, and available to the water commissioner, water users, District Court, and Clerk of Court.

Judge Guenther was delighted with the proposal and brought interested water users and citizens together for a "Water Meeting" to announce the project and get their input. The Water Meeting was held on Monday, March 26, 2001, at 7:00 p.m. in the Community Room of the old Gallatin County Courthouse and was very well attended. Staff from the Bozeman Water Resources Regional Office and the Water Court attended and assisted Judge Guenther in addressing the water users' concerns and questions. The overall input from the water users was very encouraging, and thus the West Gallatin River Enforcement Project was initiated.

A task force consisting of Dorothy Bradley, Carol Brown, Rusty Taylor, Jim Kindle, and Rita Nason was informally developed. Each took charge of those parts of the project within his or her individual areas of expertise.

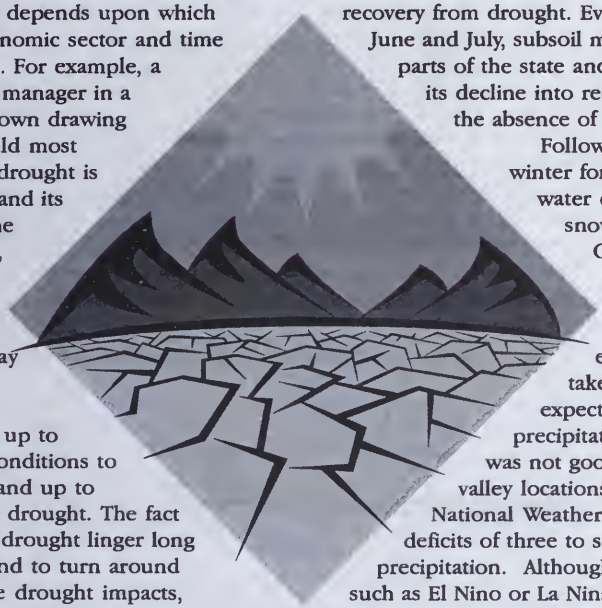
From water right information stored in DNRC's database, Jim Kindle prepared an index of all previously decreed irrigation rights within a specified stretch of the West Gallatin River. These water rights were included in the Water Court's West Gallatin River Temporary Preliminary Decree issued September 26, 1985. This index included clarification and issue remarks on ownership, flow rate, source, points of diversion, and means of diversion. Jim also produced point-of-diversion and

(Continued on Page 6)

WHEN DOES A DROUGHT CEASE TO BE A DROUGHT?

By Jesse Aber

Following a couple of nasty drought years that wrought hardship and expense on many Montanans and our resources, this question is being asked once again. Of course, it is not an easy question to answer and depends upon which natural resource or economic sector and time frame one is addressing. For example, a municipal water supply manager in a small central Montana town drawing from groundwater, would most likely answer: "No, the drought is not over. It continues, and its effects may be felt for the next two or more years, absent a wetter-than-average fall, winter, and spring."



The same answer may very well come from a reservoir operator or a hydrologist. It may take up to three years of normal conditions to bring reservoir storage and up to average levels following drought. The fact is that many impacts of drought linger long after recovery begins. And to turn around long-term or cumulative drought impacts, recovery must be sustained over an extended period of time.

Other impacts from periods of low precipitation occur almost every year, and do not necessarily signal the presence of drought. If the wildfire season takes off, doesn't that mean we are still in drought? It is normal to have a wildfire season each year in Montana in August. The Montana Drought Response Plan defines drought as an extended period of below normal precipitation which causes damage to crops and other ground cover; diminishes natural stream flow; depletes soil and subsoil moisture; and because of these effects, causes social, environmental, and economic impacts to Montana.

Some folks believe that a drought is over when cool temperatures return in the fall and the first snows decorate the mountain ridges across the state. In a way, we do get a fresh start on our water supply each year. Consequently, the "Water Year" to a scientist or an irrigator begins October 1 and ends September 30 of the following calendar year.

However, the assertion that a drought ends in the fall with the passing of the equinox and the arrival of early high elevation snows tends to overlook the balance sheet from the preceding year. And 2001 was a good example of how precipitation deficits can continue to thwart recovery from drought. Even after the rains of June and July, subsoil moisture remains low in parts of the state and streamflow continues its decline into record low territory in the absence of groundwater base flow.

Following another lackluster winter for accumulation of snow water content in mountain snowpacks, the Montana Governor's Drought Advisory Committee decided that February was not too early to reconvene and take stock of what to expect for water supply and precipitation for 2001. The news was not good. A number of sites at valley locations monitored by the National Weather Service revealed deficits of three to six inches of precipitation. Although no climate anomalies, such as El Nino or La Nina, were present, it was apparent that, short of a banner spring for moisture, Montana would be in for drought impacts, perhaps worse than experienced in 2000.

The sobering prospect of another year of livestock water and grass shortages, limited water for irrigation and instream resources, and another fast and furious wildfire season prompted the drought committee, on April 2, to put all 56 counties on "Drought Alert," the first of two response thresholds identified in the Montana Drought Response Plan. Above average moisture in much of the state in April was not enough to keep the committee from assigning 41 counties the plan's second level of response, the "Severe Drought" status, at its May 17 meeting in Helena.

On May 30, Secretary of Agriculture Ann Veneman, recognizing the continuing nature of drought conditions in Montana and in response to the request of Governor Martz and our Congressional Delegation, assigned a Natural Disaster Determination (NDD) status for all 56 Montana counties. NDD status paves the way for low-interest loans, extensions of previous loan

(Continued on Page 5)

BROADWATER PLANT GENERATES ELECTRICITY AND REVENUE FOR MONTANANS

By Tim Kuehn

The Broadwater Hydroelectric Power Project, located on the Missouri River near Toston, is owned and operated by the Montana Department of Natural Resources and Conservation (DNRC). Daily operation of the plant is conducted by four DNRC employees: Walt Anderson, Hydropower Section supervisor; Mike Sims, plant superintendent; Brian Carroll, plant operator; and Jim Beck, backup plant operator.

Toston Dam - Photo by Walt Anderson

The department was granted an electrical generating license from the Federal Energy Regulatory Commission (FERC) in 1984, and construction of the project was completed in June 1989. Total construction costs were $26 million, and financing was obtained through the sale of state revenue bonds.

The dam is a 26-foot concrete overflow structure with Bridgestone rubber gates serving as water level controls. The maximum generating capacity of the project is 10 Megawatts (MW), with an average annual capacity of 6 MW, depending on annual precipitation and runoff in the upper Missouri River basin. The turbine is capable of transmitting 7,000 cubic feet of water per second.

In the early years of operation, numerous emergency shutdowns due to various mechanical and electrical problems were experienced. In addition, the generator and speed increaser were deteriorating, stemming from a defective design. The department initiated arbitration proceedings with the turbine generator contractor in order to repair the defective components. In 1993 the department received a favorable ruling, requiring the contractor to correct the major problems. Major rehabilitative measures were performed in 1995, and currently the project operates with a 97 percent operating availability.

In 1987 the department entered into a 35-year contract with Montana Power Company for the sale/purchase of the project's electrical generation. Contract power rates were established by the Public Service Commission. The project receives 5 to 5 1/2 cents per kilowatt hour, producing an average gross revenue of $3.1 million per year. Revenue from power sales is used to pay operation and maintenance costs and repay revenue bonds. Surplus revenue is deposited into a special account that finances rehabilitation of other state-owned water projects. To date, the project has generated over $3 million in surplus funds.

In an effort to improve efficiency and increase power generation, the department constructed a rock barrier that separates the turbine intake from the Broadwater - Missouri irrigation canal intake. Isolation of the two intake structures allows higher power-generating levels during spring runoff without reducing flows into the canal diversion. The department is currently negotiating with a manufacturing firm to replace the existing trash rake machinery with a more effective design.

A major component of the power plant's construction was mitigating damages to fish and wildlife. A 16-acre wetland area was built to replace wetlands destroyed when the reservoir level was raised. Improvements have also been made to trout spawning habitat in the Toston to Canyon Ferry reach of the Missouri River to replace trout fatalities from turbine operation.

The department is responsible for monitoring and reports annually to FERC to verify the continued success of the project for the term of the FERC license.

(Drought continued from Page 3)

deadlines, and tax benefits from the Internal Revenue Service for producers hit hard with forced livestock sales and crop losses. Essentially, the federal government had recognized that the drought of 2000 was still alive and growing in 2001. And in places like Stillwater, Carbon, Liberty, Toole, Teton, Cascade, and Chouteau counties 2001 would be the third or fourth year of continuing drought.

On June 6, the 15 counties remaining on Drought Alert status received the Severe Drought designation. Grazing of Conservation Reserve Program (CRP) lands was approved in most counties by mid-June and on July 10 haying of CRP lands was approved for a number of counties. By mid-June, the rains began to arrive, breathing life back into stunted and marginal range grasses, alfalfa, and grain crops.

According to the National Weather Service at Great Falls, June precipitation at month's end ranged between about 110 and 190 percent of average. Although June is our wettest month of the year over much of Montana, and totals at some locations were over four inches, the Water Year numbers for the seven climate divisions of the state continued languishing in the 70 to 85 percent of average range with the exception of the northeast division at about 120 percent of average.

July continued the improved precipitation trend with monsoon moisture tracking north from the southwest U.S. to deliver as much as six and seven inches of rain in some locations of eastern Montana. Suddenly, flooding from flash rain events was a reality for some locations. It reminds me of the title on one old precipitation map: "Montana – Water Rich, Water Poor."

As we brace for the remaining month and one-half of summer, an air of complacency has settled around many a city dweller and other folks across the state. After all, in the four-month period from April 1 through the first few days of August, or about one-third of the year, Montana towns have received anywhere from six to a whopping thirteen inches of rain at Miles City and Culbertson. Still, pockets of drought languish in places like Dillon, Shelby, and Polson. And at the August 16 meeting of the drought committee, the Weather Service was not hopeful for much more than the one to one and one half inches of precipitation we expect in August.

Reports of full stockwater ponds and waves of tall green grass have overshadowed news from other parts of the state of falling streamflows and reservoirs and increasing wildfire potential. A quick review of current streamflow conditions reveals that in many places we are now seeing low flows that did not occur until the end of August in 2000. According to U.S. Geological Survey records, the 1934 all-time daily low streamflow records of the Yellowstone River at Billings and at Sidney were broken by August 12, 2001.

What will it take to end this hydrologic drought? A prolonged period of above average fall and winter precipitation, resulting in an abundant mountain snowpack, would be good for starters. And for the remainder of 2001, or the short term, we need more of what much of the state has been fortunate to receive over the past two months – moderate temperatures and continued timely precipitation.

In conclusion, no one could have imagined a better reversal of fortune for moisture in most parts of the state for summer 2001 given conditions as they were as late as June 10. And we may look back nine months from now and be confident saying recovery from drought was well underway by July 2001. The fact remains that at any given time, some area of our vast state is entering, in the midst of, or recovering from drought.

So, although a strong case can now be made for the beginning of the end of drought in parts of the state, please give me until late spring of 2002 to let you know whether I believe we remain in drought, or until late summer 2002 to answer whether we are in a new drought or out of the drought that began in 2000! Excuse me, the one that began in 1998 in the Golden Triangle, or 1997 in Stillwater County, or, Well, you get my point!

WATER LINES On-Line

Water Lines can now be accessed on the Web at:
www.dnrc.state.mt.us/wrd/newsletters.htm

We are currently developing an email address list to notify readers when the newest issue of Water Lines has been posted on the Web. A message will be sent to you connecting you to a link that will take you directly to the newsletter. If you prefer to be on our email notification list, rather than our mailing list, please send your email address to me at cforgey@state.mt.us. Please help us keep rising printing and distribution costs down.

(West Gallatin continued from Page 2)

owner indexes.

From the point-of-diversion index, Rusty Taylor developed a list of water rights for each ditch and canal within the project area. This task required an incredible amount of research and contact with water right owners, as the West Gallatin River basin was one of the first basins the Water Court decreed and did not include much of the information now included in decrees. Through his work, Rusty was able to identify proper ditch names that would eventually be added to each water right, as well as discrepancies with the decreed points of diversion.

With information provided by Jim and Rusty, Carol Brown created a "Decree Index for the West Gallatin River and Baker Creek" which included 405 claimed water rights in the Bell v. Armstrong decree. Carol utilized as many resources as she could find to ascertain new owners and current addresses, identify quantities of water in split rights, and generally follow up on problems that arose. A list has been prepared of issues and claims that are in need of resolution before the adjudication of the Temporary Preliminary Decree can be completed for the water rights on the West Gallatin River and Baker Creek. The Water Court will attempt to resolve these issues as quickly as possible so that Judge Guenther will have the opportunity to enforce a Water Court decree.

Jim Gilman, DNRC water resources specialist, and Regina Fullerton, DNRC coding specialist, were enlisted to assist Rita Nason in updating the 405 water right records in the DNRC database with current ditch names and information pertaining to the basis of the historical decreed right being claimed. In addition, printed maps are being prepared from digital data that will identify the location and ditch name for all diversions within the project area.

Rita's team also reviewed and reported their finding on every Authorization to Change file issued by DNRC within the West Gallatin Project area. With the assistance of Rusty, "DNRC Reports to the Water Court" were prepared outlining essential details of the change files and recommendations for Water Court and DNRC action.

Dorothy Bradley and Judge Guenther arranged a meeting with Les Aaberg and the task force to gain commissioner input. Judge Guenther appointed Dave Pruitt as the West Gallatin water commissioner in April of this year. Dave was immediately swept into the task force, brought up-to-date, and given charge of the final products of the project. The task force assisted Dave in preparing a letter and questionnaire to the water users designed to provide notice of Dave's appointment and to gain additional information.

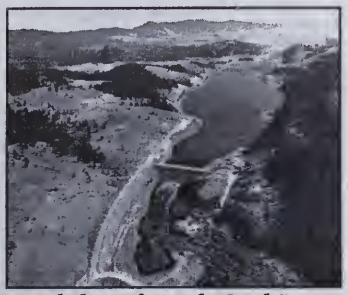
Approximately 300 letters and questionnaires were mailed to water users in the project area. The letter introduced Dave Pruitt as the new water commissioner and requested information necessary to update not only the water commissioner's records, but the DNRC ownership records as well. The number of responses, which are still coming in, have been better than expected. The task force is following up on changes to ditch lists, updating owner lists and indexes, making a list of rights that will not be in use this year, and updating the final records from the project.

Information on the West Gallatin River Enforcement Project is available on the Internet at ftp://flathead.dnrc.state.mt.us/water/w_gallat.htm. This site provides access to information on selected named ditches, the priority ranking of decreed rights, abstracts for the 405 water rights, updated owner information, and a water delivery spreadsheet. The site also provides a link to the USGS gauging station on the Gallatin River near Gallatin Gateway.

The tremendous team spirit brought to this effort by all involved has been incredible. The task force thanks Judge Loble, Judge Guenther, Curt Martin, and Scott Compton for allowing us the time and opportunity to contribute to a project of this magnitude, and for the opportunity to build strong, positive relations between DNRC, the Water Court, the District Court, and the water users. Without the unqualified faith and support of these individuals, the West Gallatin River Enforcement Project would not have happened.

BAIR DAM AND NEVADA CREEK DAM REHABILITATION PROJECTS TO BEGIN THIS FALL

By Jim Domino



Aerial Photo of Nevada Creek Dam
- Photo by Horizons, Inc.

The Bair and Nevada Creek Dam Rehabilitation Projects are set to begin in mid-September 2001. The grant and loan applications submitted to the DNRC's Conservation and Resource Development Division in May 2000 were approved, with both projects fully funded by the 2001 Legislature. HKM Engineering Inc. of Billings was selected this past July as the design consultant for each project. The State Water Projects Bureau will be soliciting bids for construction contractors in August, with work tentatively set to begin the week of September 16, 2001. The rehabilitation proposed for both Bair and Nevada Creek Dams involves the construction of new spillways, seepage drains, and outlet works outlet structures. Construction will be accomplished using a phased approach. Phase I construction, which involves mostly earth-moving work, will occur during the fall of 2001, with Phase II, the installation of the new spillways, scheduled for the summer and fall of 2002. Both rehabilitation projects are to be completed in time for the 2003 irrigation season.

Aerial Photo of Bair Dam
- Photo by Horizons, Inc.

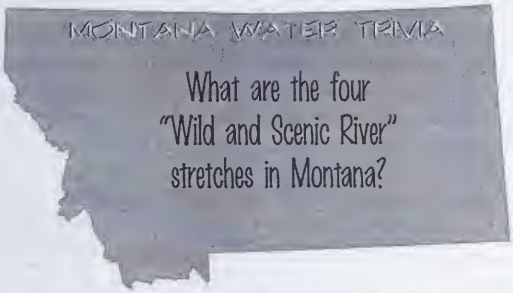
(Water Rights continued from Page 1)

3. The water right number.
4. The purpose of use for which the lease is being made.
5. The source of the water to be used.
6. The starting and ending date of the proposed water use.
7. The proposed point of diversion and place of use.
8. The flow rate at which water will be diverted and the volume of water that will be used during the period of use.
9. A description of how the existing use of water will be reduced to accommodate the use for which the lease is intended.
10. For irrigation, the lease must show the number and location of the acres that will be removed from irrigation.

At least two days prior to the water use, the lessee must submit the following information to DNRC.

11. A copy of the public notice or copies of the individual notices.
12. A copy of the lease agreement.
13. If the short-term lease is greater than 60,000 gallons a day for one project, an analysis of any potential adverse effects and a description of planned actions to mitigate any possible adverse effects to water users in the area.

An existing water user whose right is not being satisfied may file a complaint with DNRC and could cause the short-term lessee's diversion to end. However, the lessee can continue to use the water if the water use has no impact on the existing water right.



Answer: North Fork, South Fork, and Middle Fork of the Flathead River, and a stretch of the Missouri River downstream from Fort Benton.

WATER RESOURCES DIVISION EMPLOYEES RECOGNIZED AT AWARDS CEREMONY

By Cindy Forgey

On August 9, 2001, an awards ceremony was held in Pioneer Heritage Park in Helena to recognize Water Resources Division staff for outstanding performance and longevity.

Administrator Awards were given to Mary Ellen Wolfe for her dedication and hard work in developing the Montana Watercourse education program and to Mike Roberts and Mike McLane for their dedication in improving water management on the Blackfoot River.

Special Recognition Certificates were also given to Rich Moy, Larry Dolan, Jesse Aber, Velda Welch, Dave Amman, Mike McLane, and Cindy Forgey. Certificates of Appreciation were given to Jim Beck, Nancy Hughes, Anne Lowney, Illa Phillips, Sharon Borer, Sterling Sundheim, and Larry Schock.

Longevity awards were given to Kevin Smith and Beverly Ragsdale Aguirrie for 5 years of service; Dave Adair, Susan Russell, Dave Amman, Terry Voeller, Rob Kingery, and Jesse Aber for 10 years of service; Dixie Brough, Marv Cross, Cindy Forgey, Regina Fullerton, Nancy Hughes, and John Sanders for 20 years of service; Keith Kerbel, Patti Miller, Rich Moy, and Mary Ellen Wolfe for 25 years of service; and Rick Bondy for 30 years of service.

Kraig VanVoast from our Havre Regional Office and Bill Grieman from Conservation and Resource Development were also presented with the Director's Award at a ceremony held Thursday, August 16th for their work on the Fort Belknap Compact.

Jack Stultz, Mike McLane & Mike Roberts *- Photo by Devri Roubidoux*

CONGRATULATIONS TO EVERYONE FOR A JOB WELL DONE!

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NEWS FROM THE WATER RESOURCES DIVISION
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WATER NEWS

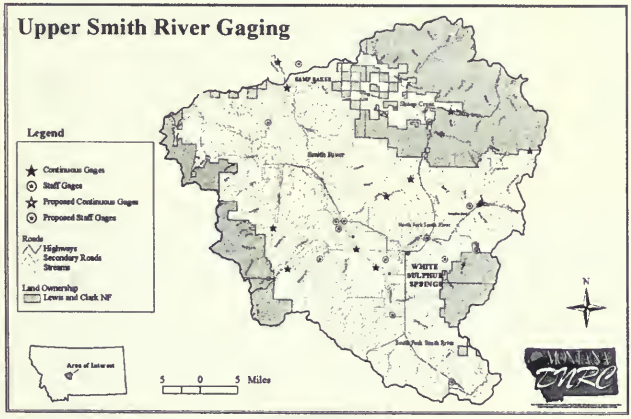
SMITH RIVER HYDROLOGY STUDY UNDER WAY

By Mike Roberts and Larry Dolan, DNRC

Water generated in the upper Smith River Basin serves many purposes. It irrigates of nearly 30,000 acres of cropland in the vicinity of White Sulphur Springs and provides streamflow for scenic floating and fisheries. Concerns over water availability for these uses prompted Meagher County Conservation District and the local office of the Natural Resource and Conservation Service to contact the Montana Department of Natural Resources and Conservation (DNRC) about heading up a study to investigate the relationship between upper basin irrigation, irrigation return flows, and instream flows in the Smith River.

Smith River above Camp Baker - Photo by Larry Dolan

The Smith River Hydrology Study, which examines the drainage area above Camp Baker, including Sheep Creek, is assessing the net effects that irrigation has on flows in the Smith River and its tributaries, and determining the effect that conversion from flood to sprinkler irrigation is having on the amount and timing of return flows.



To provide answers to these questions, surface and ground water data are being collected throughout the upper basin. Ten continuous streamflow gages monitor daily flows on the mainstem of the Smith River and major tributaries, and 15 staff gages installed on smaller streams are read semi-monthly. To track subsurface migration of water and fluctuations in water level,

(Continued on Page 2)

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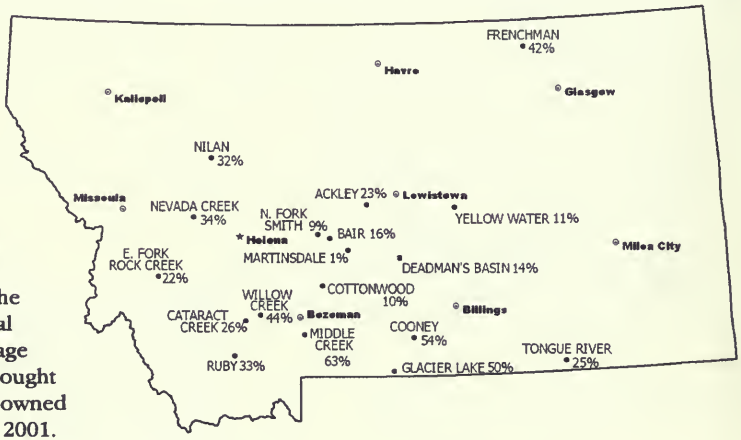
DISTRESSING WATER LEVELS AT DEPARTMENT RESERVOIRS

By Tim Kuehn, DNRC



Storage levels at state owned reservoirs managed by the DNRC are generally well below normal operating ranges for this time of year. Ron Roman, hydrographer for the State Water Projects Bureau, notes that 14 of 18 closely monitored reservoirs contain levels significantly below the average fall storage content.

Most of the reservoirs began the 2001 water year with below normal levels and never reached full storage capacity due to the continuing drought in Montana. Only five of the state-owned reservoirs reached full capacity in 2001. The 2002 water year is starting under the same adverse conditions. Numerous reservoirs are experiencing significantly reduced storage levels and without average or above average winter precipitation, it is likely the more severely impacted reservoirs will not fill in 2002. Notably, the reservoirs in the Mussellshell River Basin, (Martinsdale, Bair, Yellowater and Deadman's Basin) are experiencing the most critical situation.

Numerous structural issues arise when reservoirs are below an optimal water level for extended periods. Kevin Smith, project engineer, explains that freeze - thaw and wave action damage to control structures represents a significant concern. Freeze - thaw damage occurs when the water level is below the control structure and the concrete is exposed to fluctuating temperatures. Most of the reservoirs were built prior to the development of admixtures that protect concrete from freeze - thaw damage. Also, when water levels are exceedingly low, exposed embankments suffer damage from wave action, and concrete structures can be damaged by ice loads. Additionally, low reservoir levels provide for increased lacustrine and eolian deposits that can constrict water releases through the outlet conduit.

(Smith River continued from page 1)

groundwater levels are being monitored at approximately 50 wells throughout the basin. Irrigated acres have been mapped by crop and irrigation system type for the purpose of estimating crop water use and irrigation return flows.

Hydrologists from DNRC's Water Management Bureau and Lewistown Water Resources Regional Office recently completed the second field season of the study. Thus far, data have been gathered for 2000 and 2001, which were two extremely low water years. At least one normal and one high water year will be needed to satisfy data needs for the study. Following the collection and analysis of data, findings will be summarized in a final report.

For more information, please contact Larry Dolan, Mike Roberts, or Bill Uthman at 444-6637.

OPERATIONS OF PAINTED ROCKS ESSENTIAL TO SUMMER FLOW IN THE BITTERROOT RIVER

By Larry Schock, DNRC

Painted Rocks Dam is a DNRC managed dam, located on the West Fork of the Bitterroot River approximately 22 miles south of Darby. The dam was built in 1939, primarily as an irrigation structure with some limited seasonal recreational uses.

The earthen embankment is 800 feet long and 143 feet high. When filled to the crest of the spillway the dam impounds 31,706 acre-feet (AF) of water, which cover 655 acres. DNRC has contracts to deliver 15,000 AF for instream fisheries flows and 10,000 AF for irrigation. The contracts require delivery of the water between May 1 and September 30.

Painted Rocks Dam - Photo by Art Taylor

The irrigation water is delivered as far north as Florence (approximately 65 miles downstream), and instream fisheries flows are protected as far as Bell Crossing (approximately 48 miles downstream).

DNRC's Missoula Water Resources Regional Office staff acts as the dam tender, ensuring that the reservoir is filled in a timely fashion and that the contracts are delivered on demand.

The target date for the reservoir to reach full pool is Memorial Day weekend in a normal year and mid-May during drought years. Since the reservoir is used seasonally as a flat-water recreation area, it is important to ensure that it is full for the unofficial start of the recreation season.

The reservoir is filled as spring runoff accelerates. After the reservoir stops spilling, the gates are adjusted weekly to ensure that inflows equal outflows and that the reservoir remains at full pool, until the water is called for.

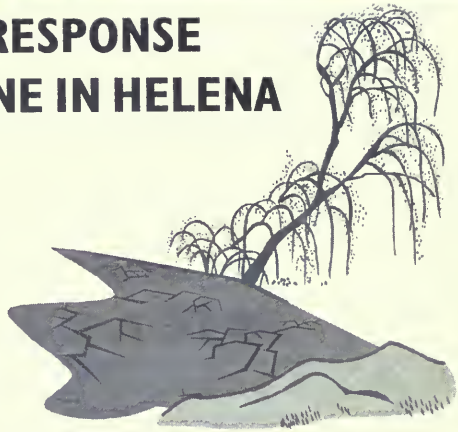
The contract water delivery is determined by representatives of the Painted Rocks Water Users Association and the Montana Department of Fish, Wildlife and Parks (DFWP). Contract water is usually called for starting in early July and is delivered until the end of September.

The District Court has appointed Vern Woolsey as the water commissioner for the Bitterroot River. Vern is paid by the Painted Rocks Water Users Association and DFWP to ensure the protection and delivery of their contracted water. Therefore, Vern not only ensures that releases are made at the reservoir, but he is also the person who makes sure that the water makes it all of the way to the last water user in Florence.

During normal years the water stored in Painted Rocks Reservoir ensures robust crops and a healthy fisheries in the Bitterroot River. Painted Rocks contract water is the lifeline of the Bitterroot River during drought years. The stored water not only allows an extended season for valley irrigators, but it also provides instream flows for fisheries and recreation.

DFWP has identified an optimum low flow rate of 400 cubic feet per second (cfs) at the Bell Crossing bridge. Prior to the DFWP purchase of water, average late summer flows at Bell Crossing were in the 40 to 50 cfs range and were sometimes as low as 25 cfs. Since that purchase of Painted Rocks water, DFWP has consistently been able to meet the targeted flow rate at Bell Crossing during normal years. Even during the last two years of severe drought, the flows at Bell Crossing have not fallen below 200 cfs, helping to ensure healthy Bitterroot River fishery.

COUNTY DROUGHT RESPONSE COORDINATORS CONVENE IN HELENA



By Jesse Aber, DNRC

On November 9, nearly 20 local drought response coordinators from across the state were joined at the Capitol Building by members of the Governor's Drought Advisory Committee, Congressional delegation staff, and other county, state, and federal officials to discuss drought planning, response, and policy in the wake of two of Montana's most severe drought years on record. The state drought committee had decided at its August meeting to provide a season-end forum to hear from local drought response coordinators and county officials regarding their efforts to address the impacts of drought over the course of 2000 and 2001.

The meeting opened with a warm welcome from Lt. Governor Karl Ohs, chairman of the Governor's Drought Advisory Committee. The welcome was followed by some remarks from members of the drought committee, including DNRC Water Resources Division Administrator Jack Stults, who briefly outlined the purpose of the meeting. Jack emphasized the committee's need to hear from county commissioners and drought coordinators regarding their experiences in dealing with a variety of drought–related issues from their respective areas of the state.

Next, local coordinators addressed the group with Kathleen Williams, of Fish, Wildlife, and Parks facilitating the ensuing discussion. A number of local drought coordinators addressed the group during "Local Drought Response Experiences - Successes, Challenges, and Suggestions." The discussion was aimed at sharing solutions to common problems associated with drought, including municipal water supply shortages, U.S. Department of Agriculture assistance programs, such as grazing and haying of Conservation Reserve Program lands, and impacts to main street businesses that support rural community economies.

Following lunch, group discussion was again facilitated by Kathleen in an exercise titled, "Turning Suggestions into Reality - How to Improve Montana's Drought Planning and Response." The thrust of this discussion was to apply the experiences and lessons learned from the morning session, framing them in terms of proactive measures that improve drought response through early anticipation of the most likely impacts, given developing drought conditions.

A number of participants felt that drought response in 2001 was improved over that in 2000 in that the drought and local meetings had continued relatively unabated, although the accrual of damage and responses slowed during the winter months. Glenn Patrick, of Montana Farm Service Agency, reported that $5.89M was issued to Montana producers during Fiscal Year 2001, mostly for stock water wells. Generally, reports from local coordinators emphasize the cumulative and debilitating effects that consecutive drought years have had on entire counties, including local services and all levels of business. Choteau County Commissioner, Ken Evans warned of human toll being taken by drought, citing the potential for increased gambling, alcoholism, depression and domestic discord. Other participants warned of the loss of farms of families that have owned and operated the same place for four generations.

Montana Congressional delegation representatives reported on efforts underway in Congress with the Farm Bill, which will provide additional assistance to rural Montana communities to address the impacts of drought. One suggestion, offered by Rich Moy of DNRC, was to host a two-day seminar in early spring in Helena to brief local drought coordinators on drought planning and sources of funding assistance.

The next meeting of the committee was scheduled for January 17, 2002, to make updates to the state's drought plan and take further action based on the comment gathered at the November 9th meeting. The November 9, 2001 meeting notes, agenda, and attendance list will be posted on the committee's Internet site at, http://nris.state.mt.us/drought.

GERALD MUELLER – A MEDIATOR AND WATERSHED GROUP FACILITATOR'S PERSPECTIVE ON WATER ISSUES

By Cindy Forgey and Jesse Aber, DNRC

For the last 13 years Gerald Mueller has operated his own mediation and facilitation business, Consensus Associates, which is focused on building agreements and solving problems regarding natural resources. Since 1991, Gerald has acted as the facilitator for the Upper Clark Fork River Basin Steering Committee, a watershed group created pursuant to a 1991 state statute. From 1974 to 1988, he worked in state government, including three years on the staff of Lt. Governor, and later Governor Ted Schwinden, and seven years as one of Montana's two representatives on the Northwest Power Planning Council, an interstate compact body charged with planning the Pacific Northwest electricity supply and with drafting a plan to ensure the protection, mitigation, and enhancement of Columbia River Basin fish and wildlife. Gerald has a M.S. in Atmospheric Science from Colorado State University and a B.A. in Physics from California State University at Fullerton. He and his wife Caralee make their home in Missoula.

Gerald feels the most challenging water quality issue facing Montanas today is improving water quality problems caused by dispersed, or non-point sources. A number of non-point water quality problems are caused by land use practices that degrade stream structure and function through bank erosion, siltation, increased water temperature, and flow alterations. In response to litigation and court orders, state government is attempting to address non-point problems through the Total Maximum Daily Load (TMDL) Program, which involves compiling scientifically defensible lists of instream contaminants and impairments for those rivers and streams with water quality problems as well as deadlines for developing plans for cleaning them up.

Gerald Mueller - Photo by Bill Schultz

While such plans and deadlines may provide a handy demonstration of progress to a judge, Gerald feels that the landowners, necessary as willing partners in the implementation of plans, may be offended by the regulatory threat such mandated deadlines imply. Gerald feels that such an approach does not engender the enthusiastic cooperation and program participation by those who ultimately determine land uses - landowners. With their local stream on the list of impaired water bodies, and thus feeling accused as water quality offenders, local landowners become defensive and attack the list. Faced with deadlines and yet another government planning requirement, landowners tend to hunker down. "Just the program name, TMDL, conveys an 'I, the state bureaucrat, know more than you do' attitude, which tends to promote distrust," according to Gerald.

Gerald doubts that a regulatory approach to non-point water quality will succeed: "Neither the state nor the federal government will have enough water cops and court rooms to force Montanans to improve non-point related water quality. That does not mean that we are necessarily doomed to bad water." His premise is that people who live with streams and rivers both want and need good water quality. If right, then a more productive approach to existing problems would be for the state to empower local water quality champions who can help landowners identify opportunities for fixing non-point problems. Help requires both technical assistance and money to design and pay for improvement projects. "The help must be voluntary which means that the lists and formal plans - the means of keeping score - should be kept back in Helena," according to Gerald.

Regarding water quantity, Gerald continues, "The most challenging water quantity issue

(Continued on Page 6)

PROJECTS BUREAU ACQUIRES CONSERVATION EASEMENT

By Tim Kuehn, DNRC

The department recently entered into a conservation easement with Decker Coal Company on the Badger Creek Ranch located in Big Horn County, Montana. Tim Kuehn, project management specialist, negotiated the terms and conditions of the easement with Decker on behalf of the department. The conservation easement partially fulfills wildlife habitat mitigation measures associated with rehabilitating the Tongue River dam.

The Badger Creek Ranch consists of 957 acres located along the upper Tongue River Valley. Both the Tongue River and Badger Creek flow through the ranch for distances of 1.6 and 1.0 miles, respectively. The proximity of riparian zones, bottomlands, and sagebrush grassland uplands with hiding habitats for larger game in the Rocky Mountain juniper communities makes the ranch highly productive wildlife habitat Wildlife on the ranch includes mule deer, whitetail deer, wild turkey, sharp-tailed grouse, Canadian geese, pheasants, and many species of non-game wildlife.

Mule deer at dusk *- Photo Courtesy of Jane Horton*

The easement will maintain the agricultural value of the land while protecting the wildlife habitat, particularly the wetland/riparian areas, the sagebrush grassland plains, and the conifer vegetation community. Additional benefits include keeping valuable lands in private ownership for agricultural use, rewarding the landowner for its role in wildlife management, and providing public recreational opportunities.

The conservation easement prohibits certain activities on the property including subdividing the land, eradicating sagebrush, harvesting timber, strip mining, draining wetlands, operating a commercial feedlot, leasing hunting opportunities, disposing of public waste or increased tilling of land. The landowner reserves the right to pasture and graze livestock in accordance with the management plan, regulate public use of the land, develop and maintain water resources, maintain historical ranch buildings and improvements, and cultivate existing fields. A baseline report documenting current ranch conditions was prepared in house by Jane Horton, GIS program manager, and will serve to resolve potential disputes.

The department and landowner will jointly conduct periodic management plan reviews and site visits. The management plan may require modifications to ensure that the goals of the conservation easement are met.

(Gerald Mueller continued from Page 1)

is finding a balance between the needs of the people and businesses with the legal right to use water with the needs of the stream itself."

Gerald thinks that the most challenging long-term water questions that matter today are, "Who will manage our water, and how will they manage it? The state must find the means to allow water to be managed locally and collaboratively, by watershed. It must be managed locally because neither the federal or state governments will ever again have the people or dollars to manage it through some centralized system."

According to Gerald, "Ultimately, local people determine water allocation and quality. It must be managed by watershed because water usage ties the people in watersheds together. Water resources are not discrete from the landforms and ecosystems that give rise to them and, in part, determine their quality. Water resources must be managed collaboratively because all of the interests in water - agriculture, hydropower, municipal, recreation - need each other and our legal and political systems will not allow any one interest to dominate the others. Agriculture alone will be unable to pay for water systems and water management. Urbanites need farmers and ranchers not just for food and fiber, but for open space, fish and wildlife habitat, and access to recreation."

2001 PHOTOS

Upper Yellowstone River. DNRC Water Management and Water Projects personnel conducted a GPS survey of major eroding banks as part of Yellowstone Cumulative Effects Study - Photo by Jim Robinson

A DNRC continuous streamflow gage on the Smith River above Fort Logan. The Smith River Hydrology Study completed it's second field season in 2001. - Photo by Mike Roberts

North Fork Blackfoot River upstream of Ryan Bridge. The North Fork Blackfoot Hydrology Study was completed in March 2001. - Photo by Mike Roberts

A YEAR IN REVIEW

Bair Dam Rehabilitation Project Begins Phase I, which included rock and overburden excavation was completed Fall 2001. Phase II, which includes a new spillway will be bid this winter - Photo by John Sanders

MONTANA WATER TRIVIA

Which river originates in Montana, enters Canada, and then returns to Montana?

INSIDE WATER LINES

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WATER NEWS

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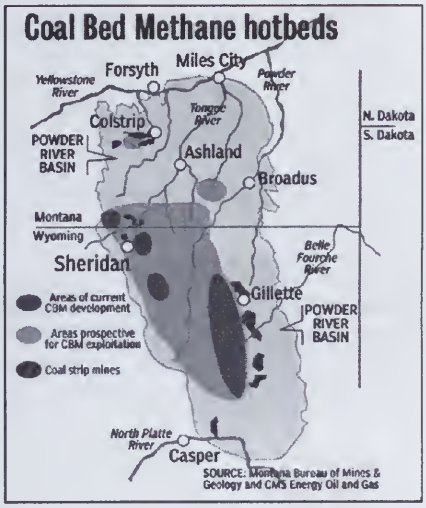
COAL BED METHANE:
POWDER RIVER BASIN CONTROLLED GROUNDWATER AREA

By Russ Levens, DNRC

Methane gas that is trapped in coal seams beneath the Powder River Basin and other areas of Montana may be an important, untapped source of clean-burning energy. The potential for adverse impacts to the natural and human environment as a result of extracting methane from coal seams could be significant, however. To address the potential impacts to existing water users in the Powder River Basin, the Montana Department of Natural Resources and Conservation (DNRC) created the Powder River Basin Controlled Groundwater Area (PRBCGA) on December 15, 1999.

The primary component of the natural gas that heats many of our homes, methane gas, historically has come from "conventional" natural gas deposits in sandstone or other underground reservoirs. Conventional natural gas reservoirs occur where relatively permeable geologic formations are sealed by overlying rock, allowing natural gas released from black shale or even coal ("source rock") to accumulate in the permeable geologic formations ("reservoir rock"). Conventional natural gas reservoirs overlie, and are separate from, water and/or oil. Natural gas flows to the surface under the confining pressure of the reservoir when a well penetrates a conventional natural gas reservoir. Initially, natural gas is produced by itself, but eventually, as the reservoir is depleted, oil or water also is produced.



Coal bed methane (CBM) reservoirs are fundamentally different from conventional natural gas reservoirs. Methane formed during the conversion of organic matter to coal can be retained and trapped by water pressure within the pore structure and fractures of coal. Under these conditions, the source rock and the reservoir rock are the same, and there is no clear separation of gas and water as is found in conventional natural gas reservoirs. Water must be pumped from CBM reservoirs to reduce water pressure before methane can be produced. Eventually, the amount of water pumped declines, and methane flows to

(Continued on Page 4)

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WHERE ON EARTH IS MY WATER RIGHT?

- WATER RIGHTS, GIS, AND THE WORLDWIDE WEB -

By Mike McLane, DNRC

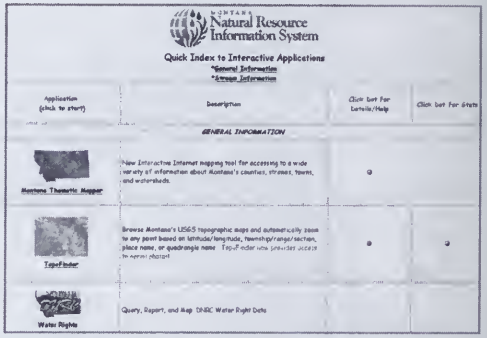
Your home computer can now access Montana's statewide water rights data in a near real-time Geographic Information System (GIS) format. We hope the public finds this tool easy to use, informative, and very convenient. DNRC sees this tool as a significant improvement in meeting citizen needs.

Montana's centralized, statewide water right records are now a subset of the Montana Interactive Applications website found at *http://nris.state.mt.us/interactive.html*. The Montana DNRC Water Rights site was activated in December. Water rights data are accessible via two different access tools – Montana DNRC Water Rights and Montana Thematic Mapper. Water rights data provided are not "real time." That is a hoped-for future product. Currently, the information presented is as it existed in DNRC's database as of July 2001. Updates will be made periodically.

This online web services are hosted and managed by the Montana State Library's Natural Resource Information System (NRIS). NRIS provides the hardware and software that drive the Interactive Applications web. Resource agencies, like DNRC, provide improved public access to their resource data via this tool.

To retrieve water right information for a specific person or company, land description, or stream, the Montana DNRC Water Rights site will be most applicable. For example, this site can find all water rights held by a single individual often by simply asking for water rights by name. However, using multiple references can make the research more efficient. An index of identified rights, as well as an abstract of a water right, can be developed online. A mapping tool is provided that will display the water right's general location. Topographic map backgrounds and, in many instances, digital orthophotos can be used as the map's backdrop.

The Montana Thematic Mapper is best suited to find water rights within a defined geographic area. For example, this tool is suited for locating all wells within a given township, or all water right diversions along a stream course within a basin or county.



The Thematic Mapper relies heavily on mapping features to deliver requested information. This tool also provides the option to map and conduct limited comparisons of water rights and several other natural resources and geographic data sets. A number of products can be developed from this site. Again, several water right index formats are available as are abstracts of individual water rights.

Data extracted and sorted through this tool are also transportable as a shape file into Geographic Information System (GIS) software and spreadsheet programs such as Excel. A map developed with this interactive mapping system can be exported and printed as a high quality graphic.

The website provides several online help tools, and you are encouraged to examine these. Although fairly intuitive, using the help tools should improve the users' skills fairly quickly.

Although this is a GIS product, it is also important to note that the points and areas displayed are "mathematically" derived. DNRC does not currently maintain a true shape file data set for each water right.

A conversion program calculates GIS point data using tabular lists of land descriptions. Point data are generated for all points of diversion, wells, reservoir locations, and places of use. For irrigation places of use, the area (acres irrigated) associated with the land description allows for the creation of a polygon representing the irrigated field. One must remember that these are only the approximate locations of the described features.

THE LITIGATION AND NEGOTIATION OF THE CONFEDERATED SALISH AND KOOTENAI TRIBES' RESERVED WATER RIGHT

By Kurt Hafferman, DNRC

The Confederated Salish and Kootenai Tribes have long been involved in litigation with the State of Montana over administration of water rights within the boundaries of the Flathead Indian Reservation. The United States Supreme Court and the Montana Supreme Court have upheld the authority of the State to adjudicate all federal reserved rights. The State's assertion of authority to implement the permit and change of authorization provisions of the Montana Water Use Act has not been as successful. The decisions by the Montana Supreme Court about permit and change authorization provisions have had profound impacts on the way the Kalispell DNRC Water Resources Regional Office handles water right issues on the reservation and how growth and development can occur within the boundaries of the reservation.

The first noteworthy case is In the Matter of the Application for Beneficial Water Use Permit Nos. 66459-76L, Ciotti; 64988-G76L, Starner; and Application for Change of Appropriation Water Right No. G15152-S76L, Pope, 278 Mont. 50 (1996) (hereinafter "Ciotti"). In Ciotti, the Court held that the Department of Natural Resources and Conservation could not issue permits within the exterior boundaries of the Flathead Indian Reservation because the criteria in law could not be met until the federal Indian reserved rights were quantified. The Montana Legislature passed legislation negating the Ciotti decision.

The legislation resulted in another important case. In Confederated Salish and Kootenai Tribes v. Bud Clinch, Director, and Montana Department of Natural Resources and Conservation, and the State of Montana, 97-609 (decided Dec. 30, 1999), 297 Mont. 448 (1999), (hereinafter "Clinch"), the Montana Supreme Court held that, even with the legislature's amendments, DNRC cannot determine whether water is "legally available" on the Flathead Indian Reservation until the Tribes' rights are quantified. Because the federal Indian reserved water rights of the Tribes are currently not quantified, the Court ordered that the Department of Natural Resources and Conservation could not issue further water use permits on the Flathead Indian Reservation. The Court limited its order to water use permits and did not address changes in appropriation rights.

Following the Montana Supreme Court's decision in Clinch, at the request of Senator Mike Taylor of Proctor, Governor Racicot conducted two public meetings in Polson and Ronan on February 16, 2000, concerning the State's interpretation of the Clinch decision. In these meetings Governor Racicot explained which water development activities the State believed it continued to have statutory authority to manage under the Montana Water Use Act, and which were not enjoined by the Montana Supreme Court in Clinch. The activities included:

1. Changes in appropriation rights;
2. Groundwater development by means of a well or developed spring with a maximum appropriation of 35 gallons a minute or less, not to exceed 10 acre-feet a year, and that is not combined with any other well or developed spring that in combination would exceed the stated limits;
3. Groundwater development by means of a well or developed spring first put to beneficial use between January 1, 1962, and July 1, 1973, for which the appropriator did not file a notice of completion with the county clerk and recorder as required by laws in force prior to April 14, 1981;
4. Temporary emergency water appropriations from any source, for which no permit is required, e.g., water used to put out a fire;
5. Groundwater developments for groundwater that has no hydrological relationship to the surface supply, i.e. non-tributary groundwater.

In accord with the statements made by the governor, the Kalispell office engaged in limited water-resource-management-related activities within the exterior boundaries of the Flathead Indian Reservation. There have been essentially

(Continued on Page 5)

ENTIRE STATE DESIGNATED A DROUGHT DISASTER AREA

By Jesse Aber, DNRC

On Thursday, March 28, U. S. Secretary of Agriculture Ann Veneman announced a statewide Natural Disaster Designation (NDD) for Montana. The secretary made the announcement a highlight of her visit to Missoula and Bozeman. This will be the third consecutive year that the U. S. Department of Agriculture (USDA) has agreed to designate the entire state a natural disaster due to drought conditions.

This year's statewide NDD was granted two months earlier than the NDD for 2001. Governor Judy Martz had visited with Secretary Veneman several weeks ago in Washington, D.C., and took the opportunity to impress upon her the magnitude of impacts to Montana from its continuing drought.

"It is highly unusual that she (Secretary Veneman) would do this so early," said Ralph Peck, Director of the Montana Department of Agriculture. "I think the continuation of the drought makes it critical," Peck said. The statewide NDD for Montana in 2000 came as persistent drought gave way to a summer plague of wildfires across the state.

Wind-eroded soils fill roadside ditches in a scene reminiscent of the 1930s. Toole County, April 2002
- Photo by Mike Waite, Staff, U.S. Rep. Denny Rehberg

The NDD provides a number of benefits to drought-impacted agricultural producers and the

(Continued on Page 6)

(Coal Bed Methane continued from Page 1)

the surface under very low pressure (a few pounds per square inch). The quantity of water produced from a CBM field is much greater than is produced from a conventional natural gas field.

Extraction of CBM is a relatively simple but intensive process. Coal seams generally are less permeable than conventional natural gas reservoirs and are under much lower pressure. As a result, CBM wells are drilled much closer together than conventional natural gas wells. Continuous pumping of this network of wells will lower water pressure in coal seams, potentially for miles around CBM fields. These same coal seams are important aquifers that are the sources of water for numerous wells and springs used for stock watering and domestic purposes. Reductions in water levels in wells and in flows to springs could be significant and persist even after all the methane is extracted.

The PRBCGA is intended to help protect existing water users from water level declines that could result from CBM development. The PRBCGA requires CBM operators to monitor water withdrawals and hydrologic impacts and mitigate impacts to existing beneficial uses caused by CBM development. CBM operators must describe existing hydrologic resources, submit a monitoring and evaluation plan, and provide notice and water mitigation agreements to all water right holders within one-half mile of a CBM field in their application to the Montana Board of Oil and Gas Conservation (MBOGC) for well spacing and field rules.

A Technical Advisory Committee (TAC) administered by the DNRC Water Management Bureau makes recommendations to the MBOGC on monitoring and mitigation of impacts to groundwater resources resulting from CBM development. The TAC oversees groundwater monitoring and reporting requirements specified in the PRBCGA and reviews groundwater data and scientific evidence related to the PRBCGA. In addition, the TAC developed a regional monitoring plan intended to address potential impacts to water levels and springs miles away from CBM fields.

(Litigation and Negotiation continued from Page 3)

three noteworthy activities. Two involve change of use authorizations (City of Polson and Axe), and one involves the development of groundwater with no hydrological connection to the surface flows of the reservation (Lang).

In the City of Polson application, the Kalispell office processed and authorized a change application for a point of diversion change submitted for a municipal supply well. In this case, the Tribes took no legal action even after the change authorization was issued and the change put into service.

The Kalispell office processed another change application (Axe) that sought to change the use of a surface water irrigation right to a recreational use right. After a public notice period during which several local landowners, the Tribes and the U.S. Bureau of Indian Affairs objected, and just prior to the commencement of the administrative hearing, the Tribes sought a preliminary injunction in State district court (First Judicial District, Lewis and Clark County, Judge Sherlock). Legal arguments were heard on February 27, 2002, and the matter is pending.

Finally, the department processed an application (Lang) for a new water use permit seeking to develop a non-tributary, 1,000-foot-deep water well from a bedrock aquifer for a planned water bottling plant. After conducting a hearing on the application, the department issued proposed findings of fact and conclusions of law that would allow for the granting of the permit. The department made a motion in the Montana Supreme Court to allow the Lang permit to be processed to completion. The Supreme Court declined, stating that it would need a factual record upon which to proceed. The department then issued a final order to allow for a factual record to come before the Montana Supreme Court.

The Tribes filed a new matter before the Montana Supreme Court, asking it to take jurisdiction to prevent the department from going forward with the final order; seeking to hold the Department's director, Water Resources Division administrator, chief legal counsel, and two senior staff attorneys in contempt of court; and alleging that the department and the named government officials violated the Supreme Court's Clinch injunctive order. The Montana Supreme Court heard oral arguments on November 13, 2001, and a decision is pending.

A ruling against the Department could create a regulatory vacuum on the Reservation in which neither the State nor the Tribes could issue water rights from any source of water within the exterior boundaries of the Flathead Indian Reservation. Even now, all the Kalispell office can do is advise that persons or entities seeking water rights should contact their legal counsels before proceeding with any water-related development plans.

Currently, the Kalispell office has about 50 groundwater development certificates that have been processed but not issued, and there is one groundwater permit, other than Lang, that is pending. Interestingly, there have not been any other permit applications since Clinch. When the Kalispell office is answering questions about water right applications, applicants are advised that they can still submit any type of application, but that the Kalispell office is not processing any files and will not issue any authorizations, permits, or certificates until otherwise directed by the department.

Because of the State's position on the processing of new water right applications and the uncertainty about when the courts might decide the Lang and Axe cases, the Lake County Commissioners have conditioned preliminary plat and subdivision approvals where water rights have not been quantified. This county decision, coupled with the decisions of the Montana Supreme Court, have created a new and distressing concern over the long-term impacts to development, real estate sales, land values, and the general economy of Lake County.

(Continued on back page)

MONTANA WATER TRIVIA

Which lake was created when a catastrophic earthquake dammed the Madison River?

Answer: Quake Lake

(Drought continued from Page 4)

businesses that support agriculture.

First, the NDD opens the low-interest Emergency Loan Program of the federal Farm Service Agency (FSA). For the first time in 15 years, new rules will allow affected producers to apply for loans for up to 100 percent of the production losses documented. Prior to this, producers were limited to applying for loans for up to 80 percent of the documented losses from drought. Affected producers will have up to eight months to apply for loans to cover documented losses.

DROUGHT

And, according to the secretary, the program's new rules make it easier and quicker for farmers who suffered losses from the drought to get federal loans. Loan approval will be based on the extent of a farmer's losses and the ability to repay the loans. Applications to the emergency loan program will now be processed by local FSA officials.

Second, the NDD triggers Internal Revenue Service income tax allowances for deferring capital gains, for example, on the forced early sale of livestock due to drought conditions causing problems with low feed, forage, or water. The gains can be deferred to the next year and perhaps longer if the drought is prolonged and a subsequent NDD is granted.

The topsoil stripped away by high winds, root wads of plants are exposed to die, resulting in long-term damage to the viability of range lands. Toole County, April 2002 *- Photo by Mike Waite, Staff, U.S. Rep. Denny Rehberg*

Third, the NDD activates the Small Business Administration (SBA) low-interest Emergency Loan Program for businesses suffering from loss of normal business volume from impacts that are related to the drought because the business is agriculturally oriented. It should be noted that businesses impacted by fire or indirectly affected by drought are not often eligible for the SBA program. Interested parties can call the SBA at 800-827-5722 for more information.

Finally, the most significant benefit the NDD may provide for 2002 is adding momentum to the passage of the disaster payment amendment to the Farm Bill. The Montana Governor's Drought Advisory Committee recently sent correspondence to each one of the committee conferees, stressing how critical the $2.4 billion natural disaster assistance is to Montana farmers, ranchers, tribes, and agri-businesses. U. S. Representative Dennis Rehberg was quoted as saying, "(The NDD) gives us an opportunity to go back to the (Senate-House Conference Committee) conferees on the (pending) Farm Bill and say, 'See, we were telling the truth. We really do have a drought back here (in Montana)'."

For weeks, Montana's entire Congressional delegation has been working hard to make the case for the disaster payment amendment to the Farm Bill, which is being hotly debated in Congress. Senator Conrad Burns, R-Mont., called the (NDD) action welcome and significant. "We needed the (NDD) designation to break money loose for disaster relief," said Burns, who traveled through the state with Veneman. Senator Max Baucus, D-Mont., who was also present for the announcement, called the designation a "major boost."

With the statewide NDD announcement, the presumption is that a Montana county is most likely in drought, and the time-consuming standard petition process, with its multi-level review, is not required. Producers that apply will most likely get low-interest loans as long as the losses are documented and can be confirmed on a case-by-case basis by local FSA officials. And they cannot borrow elsewhere. For now, however, most producers are not interested in borrowing more money, their hopes are riding on the Farm Bill's disaster payment amendment. For more information visit *http://www.nris.state.mt.us/drought/*.

"MONTANA WATER LEGEND" RON SHIELDS RETIRES FROM USGS

By Cindy Forgey

Ron Shields graduated from Penn State University in 1961 with a Bachelor of Science degree in Forestry. From 1961 to 1965 he served as an Army officer with the 25th Infantry Division. In 1965, he resigned from the Army as a captain and attended graduate school at Penn State, graduating in September of 1966 with a Master of Science Degree in Forest Hydrology. He began working for the Water Resources Division of the U.S. Geological Survey (USGS) in Albany, New York. While there, he worked as a project hydrologist on several major river basin studies throughout New York. In April 1969 he transferred to the USGS District Office in Helena.

While working in Helena, he was involved in the collection, compilation, and publication of streamflow and water quality data. Ron served in several supervisory roles, from 1972 to 1979 as Helena Sub-District chief and from 1979 until his retirement in January 2002 as the Montana District hydrologic data chief. Over the past 30 years in the Montana District he worked closely with various state, federal, and watershed groups in monitoring and reporting on the state's surface water resource. One of the more practical accomplishments has been the development of the USGS's "Realtime Data" streamflow page on the Internet. Water users and recreationists now have access to information on over 150 rivers in the state. This information can be found at *http://montana.usgs.gov/*.

In 1998, Ron was recognized as a "Montana Water Legend" by the Montana Section of the American Water Resources Association for his dedication and service to the people of Montana.

When asked what he felt was the most challenging water quality issue facing Montanans today, Ron said that it would be implementation of the Total Maximum Daily Load (TMDL) Program in the time frame ordered by the Court. Compiling a scientifically defendable database of stream contaminants and water quality parameters is going to be a challenge both in the limited time frame and the funding available for the TMDL Program.

Ron Shields

Ron thinks that the most important water quantity issue facing Montanans would have to be the lack of both precipitation and surface water runoff as the result of the continuing drought. Many streams and rivers are currently flowing at near record low levels, and most reservoirs are below normal storage for the upcoming season. This presents a definite challenge for water managers, irrigators, and recreationists to share what may be a very limited supply this summer.

Water-related issues in the next 10 years will undoubtedly be based around instream flows, water (both surface and groundwater) availability and development for urban sprawl, and conflicts between water users. One of the strong points of recent stewardship of the state's water resources has been local citizen watershed groups that have sprung up in various basins throughout Montana. These groups, made up of local folks, have been instrumental in providing a balance of practical water management and stewardship of the water resources of their respective basins.

Ron lives in the Helena valley with his wife Addie. His plans for retirement are to volunteer with the USGS, Trout Unlimited and go fishing. Good luck, Ron, on your retirement.

(Litigation and Negotiation continued from Page 5)

At the same time that the litigation has advanced, the negotiations of the Tribes' federal Indian reserved and aboriginal water right claims have also resumed with the Reserved Water Rights Compact Commission. The State, federal government, and the Tribes have had three negotiating sessions within the last two years. In June 2001, the Tribes issued a proposal setting forth how the Tribes believed the federal Indian reserved water rights claims should be resolved. The proposal is available on the compact commission's website at *http://www.dnrc.state.mt.us/rwrcc/index.htm*. In the proposal, along with other statements, the Tribes concluded that their water rights are contained in a "unitary system" that includes both surface water and groundwater and that these rights are "pervasive." In the proposal, the Tribes suggested that they should have sole jurisdiction over all water rights, Tribal and State-based, within the boundaries of the reservation.

The proposal raised many concerns, and, at the third negotiating session in February of this year, the Tribes' proposal was set aside as a working document. The Tribes and the State have agreed to form three working groups: a technical group to look at hydrology, an interim permitting and administration process group, and a claims examination group.

The interim permitting group, which was subject to and approved by the Tribal Council, is moving forward. Representatives of the Tribes, State, and the federal government are currently meeting to discuss an interim permitting and administration process with the goal of agreeing on a system of administering water rights permitting and changes during the time that negotiations are proceeding. Without an interim agreement, water-related development within the boundaries of the Reservation would be minimal, or nonexistent, until the adjudication or settlement of the Tribes' federal reserved rights is completed.

The State is estimating that the effort to negotiate and quantify the Tribes' reserved water right may take as little as 5 and as many as 10 years. It is possible that the whole quantification process may be as long as 15 years. Needless to say, local concern is high.

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NEWS FROM THE WATER RESOURCES DIVISION
MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION • WINTER 1997

MISSION: TO PROVIDE THE MOST BENEFIT, THROUGH THE BEST USE, OF THE STATE'S WATER RESOURCES FOR THE PEOPLE OF MONTANA

DEPARTMENT NEWS

LEGISLATURE TO CONSIDER WATER ISSUES

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THE 55TH SESSION OF THE MONTANA LEGISLATURE BEGAN MONDAY, JANUARY 6, IN HELENA. AMONG LEGISLATION TO BE CONSIDERED BY THE SESSION ARE A NUMBER OF BILLS RELATING TO WATER ISSUES.

The bills outlined below have all been formally introduced and are listed by their HB or SB number.

• **HB0071** - An act increasing the emergency loan cap from the renewable resource grant and loan program from $1 million to $10 million; amending section 85-1-605, MCA; and providing an immediate effective date.

• **HB0120** - An act providing for an additional exception to the upper Missouri River basin closure and amending section 85-2-343, MCA.

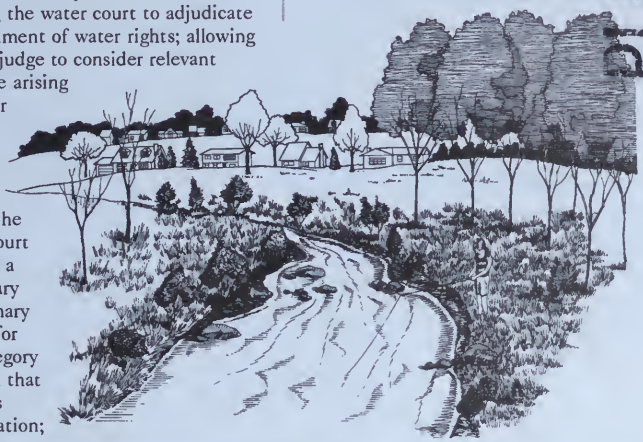
• **HB0283** - An act ratifying a reserved water rights compact between the U. S. Fish and Wildlife Service and the State of Montana.

• **HB0300** - An act appropriating money to the Department of Natural Resources and Conservation from the renewable resource grant and loan state special revenue account for a grant to the Glen Lake Irrigation District for needed repairs to Costich Dam, giving priority to this grant over those in HB0006, and providing an effective date.

• **SB0097** - An act generally revising the water laws to clarify that the Department of Natural Resources and Conservation may issue water permits and change authorizations prior to the completion of an adjudication in a source of supply; clarifying that water reserved under state law is not synonymous with federal and Indian reserved water rights under federal law; amending sections 85-2-101, 85-2-102, 85-2-217, 85-2-228, 85-2-301, 85-2-302, 85-2-311, 85-2-313, 85-2-316, 85-2-321, 85-2-329, 85-2-331, 85-2-336, 85-2-340, 85-2-341, 85-2-342, 85-2-401, and 85-2-402, MCA; and providing an immediate effective date and a retroactive applicability date.

• **SB0108** - An act generally revising water adjudication laws; allowing the water court to adjudicate abandonment of water rights; allowing a water judge to consider relevant evidence arising before or after July 1, 1973; providing for the water court to enter a temporary preliminary decree for any category of claim that requires adjudication; requiring objections to be filed after a preliminary decree states; allowing claimants and objectors to amend their claims or objections; giving claimants an opportunity to file counter-objections; encouraging increased use of alternative dispute resolution; clarifying the process for administering water rights pending adjudication; amending sections 3-7-501, 85-2-227, 85-2-231, and 85-2-406, MCA; and providing an immediate effective date.

If you are interested in learning more details about a particular bill, such as its sponsor(s) and current status, please call (406) 444-5648 or 1-800-962-1729.



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EAST FORK ROCK CREEK REPAIRS NEARLY COMPLETE

MOST OF THE WORK ON THE EAST FORK ROCK CREEK DAM IN GRANITE COUNTY, NEAR PHILIPSBURG, MONTANA, HAS BEEN COMPLETED FOR THE WINTER.

Photo by Rick Bondy

The emergency at this state-owned dam, which is managed by the Department of Natural Resources and Conservation (DNRC), began June 29, 1996. The appearance of muddy water below the dam and subsequent development of a sinkhole on the dam's downstream face led to fears of dam failure and the evacuation of local stream users from an area extending 20 miles below the dam.

Rehabilitation included replacement of the main drain (with three heavy-duty plastic drains), construction of a chimney drain, installation of another subsurface drain, lining and reinforcement of a culvert, and reconstruction of the clay blanket. The estimated lifespan of the newly repaired pipes is up to 150 years.

The toe berm has been completed, and all planned components are in place. Some grading work on the upstream and downstream faces of the dam and final reclamation, including re-seeding, will be completed this spring and summer. The monitoring and relief wells still need to be finished to their permanent levels at the tops of the wells. A funding request is being presented to the legislature for an emergency warning system, with plans to install the system this spring or summer.

With the monitoring wells, the drainage collection box, and weir in place, monitoring of the dam's "vital signs" has already begun. This winter the monitoring points will be measured weekly as long as access is possible. Once the road is open in the spring, weekly measurements will resume until the reservoir storage reaches 10,000 acre-feet. After that, more frequent measurements will be taken. When the reservoir elevation is rising significantly, more frequent visual observations and measurements will be conducted by a DNRC engineer.

DNRC is committed to an East Fork Rock Creek Dam rehabilitation project that provides for the safety of Rock Creek residents. From the onset of the crisis, the situation has been characterized by cooperation and shared information among DNRC, Granite County officials, additional agencies, and the public.

FYI WATER RIGHT TRANSFERS

Do you keep forgetting to file a water right transfer certificate? Well, when a new user wants to appropriate seventy-six zillion acre-feet of water upstream from your newly acquired diversion or from a well located a half mile from your domestic well, the department will not know that you own the water right, nor will it know your address. You will not be notified of the proposed water use.

The law states that the transferrer (seller) or his agent shall file a water right transfer certificate. But there is no incentive to compel compliance. So, it's up to you as a buyer to march the seller to the county clerk and recorder's office to complete a water right transfer certificate. Sometimes this is impossible. In that case, you, as a buyer, can file a water right transfer certificate simply by producing the deed or contract for deed showing ownership of the property where the water is used. Water right transfer certificates are available at the county clerk and recorder's office and at the Water Resources Regional Office in your area.

MONTANA'S CHIEF WATER JUDGE

MONTANA'S CHIEF WATER JUDGE, C. BRUCE LOBLE, WAS APPOINTED TO THE POSITION ON MAY 14, 1990, BY SUPREME COURT CHIEF JUSTICE, JEAN TURNAGE.

Photo by Doug Lonsman

Judge C. Bruce Loble

As chief water judge, Loble administers the adjudication of Montana's existing water rights and oversees the duties and responsibilities of the Montana Water Court, which consists of four water judges, six water masters, and three clerks.

Loble was born and raised in Helena and graduated from Helena Senior High in 1965. His family, producing five lawyers and three judges, is well known in the judicial field. His father served as district court judge in Helena for seven years until 1989, and his grandfather had held this same office for 12 years during the 1960s and early 1970s.

In 1969 Loble received his B.A. degree in history and political science from the University of Montana. After graduating from the University of Montana Law School in 1972, he served in the Armor Branch of the United States Army and was later employed in Washington, D. C., as a trademark attorney with the U. S. Patent Office. In 1973 he returned to Helena to practice law. For 17 years his practice focused on water rights and related natural resource areas and included administrative hearings before DNRC, water right trials before the District and Water Courts, and appeals to the Montana Supreme Court.

He has been a member of the State Bar of Montana since 1972 and chaired the Section on Land and Natural Resources from 1978 to 1982. Along with his father, he co-authored a *Law Review* article entitled "The Rocky Road to Water for Energy." He frequently lectures on the subject of water rights and water right litigation. He served as the chairman of the board of trustees for the Downtown Helena Business Improvement District and is also a past president and member of the board of directors for the Sons and Daughters of Montana Pioneers. He is a past president of both the Helena and Bozeman Kiwanis.

Judge Loble, his wife Sally, and two sons, Damon and Chandler, reside in Bozeman.

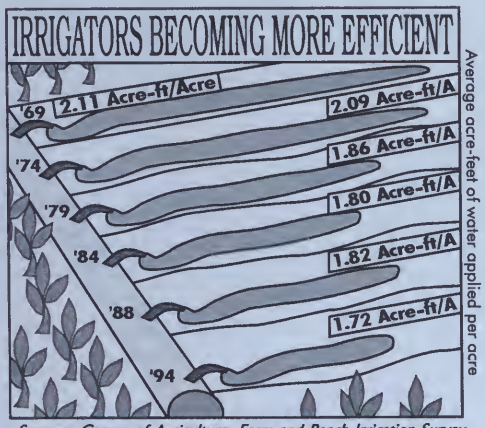
WESTERN IRRIGATORS FACE LESS SUPPORTIVE POLICIES, INCREASING GLOBAL COMPETITION

FARMERS IRRIGATING IN THE WESTERN UNITED STATES FACE A HOST OF CHANGING CIRCUMSTANCES THAT WILL REQUIRE INNOVATIONS AND NEW ADAPTATIONS TO ENSURE PROSPERITY, ACCORDING TO A RECENT REPORT PUBLISHED BY THE COUNCIL FOR AGRICULTURAL SCIENCE AND TECHNOLOGY (CAST).

The report, titled *The Future of Irrigated Agriculture*, both describes the challenges confronting agricultural irrigators and identifies possible responses to change.

Dr. Henry Vaux, Associate Vice President for the University of California's Division of Agriculture and Natural Resources, chaired the CAST task force, which was drawn from CAST members, a consortium of some 30 professional scientific societies.

According to the report, competition for increasingly scarce water supplies to serve growing urban and environmental needs means that water will become less available for irrigation.



Source: Census of Agriculture, Farm and Ranch Irrigation Survey

"Western growers face intensifying competition for developed water supplies," said Vaux. "Growers in areas where groundwater is overdrawn will face increasing costs. Simultaneously, federal agricultural and water policies — which have been very generous to irrigated agriculture historically — are likely to become less favorable," he said.

In the next decade, Vaux said, the circumstances surrounding irrigated agriculture will be very different from the circumstances of today.

Tighter restrictions on water supplies, combined with the globalization of markets for food and fiber, which is expected to increase dramatically over the next ten years, are likely to create a very challenging economic environment for western growers, he said.

According to the report, change will not affect all regions of the West equally. Groundwater overdraft is most severe on the southern Great Plains, but is also significant in Arizona and California. Rapidly growing urban areas will compete with irrigated agriculture for relatively fixed supplies in California and Arizona.

Competition from environmental and instream uses will be pervasive, but most intense in the Pacific Northwest, where additional instream flows may be required to support anadromous fish, hydroelectric power generation, and navigation.

Native American claims on western water supplies are potentially very large, the report says, particularly in central and southern Arizona. While it is unlikely that many of these claims will be settled, settlements favoring Native Americans would likely result in the shifting of some irrigated agriculture in Arizona to reservation lands.

Settlements requiring instream flows could affect agricultural water supplies adversely in the Pacific Northwest and in specific locales elsewhere.

The report stresses that most of the laws and institutions governing and guiding irrigated agriculture were developed in another era and are ill suited to one in which premiums will be placed on efficient water use, flexibility, and adaptability. These include:

- antiquated systems of state and federal water laws
- enforcement systems that create uncertainty about who is entitled to use how much
- legal systems that fail to provide incentives to manage water efficiently
- barriers to marketlike exchange of water rights
- water management jurisdictions that do not properly account for the various interdependencies in water use

In addition to this, the report says, existing rates of investment in agricultural research and development in the United States are below those in other developed countries, despite the fact that research and development will be critical if U.S. growers are to adapt and compete effectively in global markers.

Although many methods of adapting to water scarcity are already in use — such as the use of sophisticated irrigation technology and water management schemes to manage water more precisely and efficiently — an entirely new approach to water management is needed.

The ability of western growers to adapt successfully to future circumstances, said researchers involved in writing this report, will largely depend on the development of policies, as well as new institutions that are better suited to an era of water scarcity.

The report recommended adopting policies which create consistency and certainty in the regulatory environment in which irrigated agriculture operates, as well as policies which establish marketlike forces and incentives.

"Such policies can harness the entrepreneurial abilities of individual growers while mandating compliance with environmental, safety, and other regulations," says the report. Also needed, it says, "is appropriate protection for third parties" within a well-functioning water market, and policies which underwrite public investment in basic research and in research yielding benefits that cannot be appropriated exclusively by single growers.

"Research and development contributed significantly to the emergence of the U.S. agricultural economy as the strongest and most productive in the world," the report concludes. "Investment in research and development will be crucial in helping the nation maintain this position in an increasingly competitive global environment."

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ADJUDICATION TASK FORCE

IN 1995, THE LEGISLATURE PASSED S.B. 387, WHICH DIRECTED THE CHIEF WATER JUDGE, C. BRUCE LOBLE, TO APPOINT A WATER ADJUDICATION ADVISORY COMMITTEE.

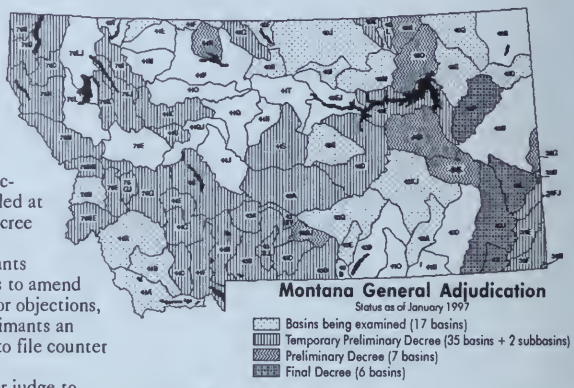
The purpose of the committee is to provide the Water Court, Montana Supreme Court, DNRC, and the legislature with methods to "improve and expedite" the adjudication process.

The committee was appointed in September 1995. It includes three nongovernmental attorneys (John E. Bloomquist, William Russell McElyea, and R. Mark Josephson) and three water users (Barry R. Hedrich, Eugene Manley, and Vernon L. Westlake). The committee also includes ex officio members C. Bruce Loble, Chief Water Judge; James J. DuBois, U. S. Department of Justice; Harley Harris, Assistant Montana Attorney General; Don MacIntyre, Chief Legal Counsel, DNRC; and Albert Stone, Professor of Law Emeritus, University of Montana.

The committee met approximately once a month and submitted its report to the Montana Supreme Court on October 1, 1996. Most of the committee's recommendations require changes to statutes that govern the adjudication process. The recommendations have been presented to the legislature as Senate Bill 108. A summary of the bill is:

- requires objections to be filed at the initial decree stage
- allows claimants and objectors to amend their claims or objections, and gives claimants an opportunity to file counter objections
- allows a water judge to consider relevant evidence arising before and after June 30, 1973
- clarifies the role of the district court and the water court in administering water rights during the pendency of the adjudication

Because of time limitations, the committee recommended further study in several areas. They recommended further study of how exempt claims should be treated in the adjudication, whether there should be an institutional objector, how permits and changes should be combined with the decrees to serve as guidance to water commissioners in distributing water, and the impact subdivisions may be having on the adjudication process.



The committee will likely reconvene after the 1997 legislature to continue its role of evaluating potential adjudication issues.

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WATER LINES

NEWS FROM THE WATER RESOURCES DIVISION
OF THE DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

Governor's Upper Yellowstone River Task Force concludes project – CHICO CONFERENCE SUMMARY

By: Liz Galli-Noble, Task Force Coordinator

The *Governor's Conference for the Upper Yellowstone River* was hosted by the Governor's Office, Governor's Upper Yellowstone River Task Force, and Park Conservation District. It was held at Chico Hot Springs Resort in Paradise Valley from October 20 to 22, 2003. A total of 138 individuals attended the three-day conference. The event brought together many project partners, both local and national, and helped ensure that the task force's recommendations and scientific findings were articulated to the public and governmental agencies.

The conference had multiple purposes: (1) present the task force's 43 river management recommendations and explain how they were developed; (2) review research investigation findings and integrated results; (3) discuss, analyze, and learn from the policy processes developed and applied by the task force; and (4) initiate a dialogue about long-term management in the upper Yellowstone River watershed for local, state, and federal entities.

Timely dissemination of relevant information intelligible to the public has been an important aspect of the Upper Yellowstone River Project and the development of river management recommendations. This final project conference at Chico proved to be an excellent venue for the task force to share its final recommendations. Governor Judy Martz and several of her staff attended. The Governor and John Bailey, chair of the task force, delivered positive and thoughtful opening speeches during the banquet on October 20. This set the stage for the conference; the upbeat, informative atmosphere of the entire conference encouraged communication amongst the diverse groups attending.

The upper Yellowstone River study area was defined for the task force in November 1997 in Governor Marc Racicot's Executive Order No. 19-97 as "that reach of river (including its tributaries), beginning at the Yellowstone Park boundary and extending downstream to the bridge crossing at Springdale," Montana. Flanked by the Crazy, Bridger, Absaroka, and Gallatin mountain ranges and Yellowstone National Park, approximately 85 miles of the Yellowstone River flow within this 2,930- square-mile basin. Some 15,000 people live in Park County, and the vast majority of them will be directly or indirectly affected by the task force's management recommendations addressed at the conference.

The 43 recommendations developed by the task force address a variety of issues facing the river and its users – including bank stabilization, bridge replacement, financial incentives for conservation, fisheries monitoring and protection, future science and monitoring, stakeholder group development, permitting programs and regulatory decisions, and noxious weed monitoring and eradication. For more information regarding the recommendations see the task force website at: http://www.upperyellowstonerivertaskforce.org/

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION — WATER RESOURCES DIVISION

"To provide the most benefit, through the best use, of the state's water resources for the people of Montana."

ARTHUR R. "BUD" CLINCH
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Montana's Drought of Fits and Starts

By: Jesse Aber, DNRC

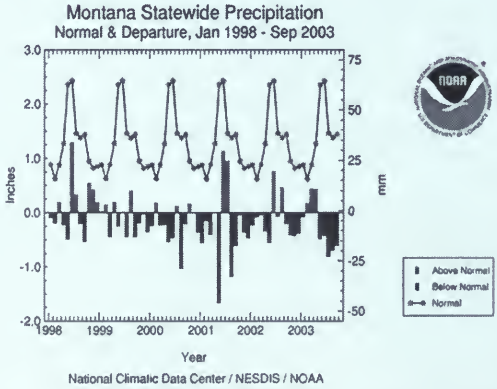
Montana is off to a good start for the new water year with a mountain snowpack that ranges from average to above average. According to "Daily Mountain Precipitation Update" of the U.S. Natural Resources Conservation Service (NRCS), much of the state, as summarized by the Snow Survey for 15 major river basins, is on track with the historical average, as measured at the high elevation SNOTEL automated sites. A "water year" runs from October 1 to September 30 of the following year.

As of December 29, 2003, NRCS indicates that the snow water content of the Missouri headwaters basin was almost 100 percent, the upper Yellowstone River basin was about 90 percent, and the Smith-Judith-Musselshell basins were at 107 percent of normal for snow water content. The Sun-Teton-Marias basins were about 90 percent, a pleasant surprise after 2002, when they ended the snow season at 75 percent, and the St. Mary-Milk river basins ranked at about 90 percent of the 1971-2000 average. West of the Continental Divide, the Kootenai and lower Clark Fork river basins were at 105 percent and the Bitterroot was at 115 percent of average for snow water content.

Contrast this with December at this time in 2002, when the Missouri River headwaters basin was 55 percent of the 1971-2000 average for snow water content, the upper Yellowstone 67 percent, the Sun-Teton-Marias 32 percent, the lower Clark Fork 42 percent, and the Bitterroot at 53 percent. The upper Missouri and the upper Yellowstone languished in the low numbers on through January and early February, but a series of snowfall events allowed these basins to finish the season in the average range, as did the major basins west of the Continental Divide.

However, unseasonably warm weather in May caused the mountain snowpack to come roaring out weeks early, compressing the high streamflow runoff into a shorter than normal period and limiting the window of opportunity for irrigation diversion for water users without access to stored water. The abbreviated duration of the mountain snowpack runoff period would have implications for surface water supplies for the following four or more months.

There is also some good news about precipitation at valley elevations from the National Weather Service (NWS) posted on its Great Falls Internet site at: http://www.wrh.noaa.gov/Greatfalls/drought_semi.pdf



Kalispell was 91 percent of average for water year precipitation received (October – November), and Billings, another dry spot for 2003, was 84 percent of average for the same period. However, some locations continue to languish. For instance, for the first two months of the new water year, Dillon was ranked the 4th driest of 64 years of record at 19 percent, and Great Falls had the 6th driest start of 112 years of record at 30 percent. According to NWS, September was the 32nd driest September of the past 109 years for the state as a whole, and the 4th consecutive month of much below average precipitation.

As much as I want to put water year 2002 – 2003 behind us, if we back up to mid-summer, it becomes readily apparent where things turned sour on us for 2003. Our apparent climb out of a four-year statewide drought came to a halt like solar clockwork on June 21, the longest day of the year, when daily high temperatures started to climb. By July 8, when I was taking my canoe off the Smith River, flows were less than 100 cubic feet per second and dropping, and the mercury was edging toward the century mark.

NWS reports that for the month of May 2003, Helena had 2 days over 90 degrees, June had 3 days, July had 20 days, August had 17 days, and September had one day over 90 degrees, for a total of 43 days with a daily high temperature over 90 degrees. Havre had 45 days with a daily high of over 90 degrees for the same period of May through September. In fact, preliminary data from the NWS Great Falls

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Office reveal that Glasgow, Havre, and Helena each had 9 days of daily high temperatures exceeding 100 degrees, Great Falls had 8 days, Missoula and Billings had 5 days, and the folks of Miles City endured 20 days of daily high temperatures over 100 degrees!

According to the National Climate Data Center (NCDC), the period of July through September 2003 was the driest such period, statewide, since 1895! The months of July and August were each ranked the 2nd warmest of the 109-year record, and the June, July, and August 2003 period was the 5th driest of the 109-year record for that three-month period. NCDC has ranked the period of June through November 2003 as the 10th driest statewide for the 109-year record.

Contrast this with the period of October 1, 2001 to September 30, 2002, when Montana's water year ranked as the 63rd warmest and 24th driest over 107 years. On September 19, 2002, NWS reported to the Governor's Drought Advisory Committee that, statewide, average temperatures for the period of March through August 2002 ranked the 9th coolest for that six-month period since 1895. Temperature was the big story of the summer of 2002, and good news it was.

This year, winter wheat provided one of the few bright spots in agriculture, with yields in the range of 40 to over 50 bushels per acre. In contrast, spring wheat was caught by extreme heat and lack of moisture during development, resulting in yields of from 5 to 15 bushels per acre and significant abandonment. Without record heat during our longest days, spring wheat yields may have been a different story in 2003, not to mention hay production; high demand for municipal and irrigation water from reservoirs, aquifers and streams; rangeland conditions; and wildfires.

For all of the heat that the people, crops, and resources of Montana endured, the NWS Crop Year Precipitation (April through September) Map is mostly yellow and green, indicating 60 to 115 percent of average, with some 40 to 60 percent areas in the south central, northwest, and southwest climate divisions. About one-quarter of the state finished the crop year in the 85 to 115 percent of average range for precipitation received. However, I contend that the big drought story for 2003, as in 2002, was temperature, not precipitation.

If we look at agricultural statistics, water supply numbers, soil moisture figures, and groundwater levels, Montana is in worse shape at the end of the 2003 water year than it was at the close of the 2002 water year. The Palmer Hydrological Drought Index (PHDI) for Montana, statewide, for the period of 1999 to 2003 indicates a dry spell rivaled in severity and duration only by the period of 1935 to 1938, when considering the period of record, 1900 to 2003, for the PHDI. See: http://www.ncdc.noaa.gov/oa/climate/research/2003/sep/st024dv00pcp200309.html

Normal precipitation in the grain-growing regions of the state this fall helped winter wheat get off to a good start, but spotty November precipitation with windy and cold conditions put a halt to further development. As of the end of November, 89 percent of winter wheat had emerged with only 27 percent rated as good, compared with last year at the same time with 59 percent good, according to the Montana Agricultural Statistics Service's November 30 "Crop-Weather Report."

NRCS Snow Survey records indicate that, for the period of 1961 to 1985, the seasonal distribution of mountain snowpack should be at 40 percent of the total annual accumulation mark by the last week of December and at the 50 percent mark by January 10. With current snow water content in the normal range of 90 to 110 percent of average nearly statewide, we are on track for a normal water supply for spring runoff!

According to the Climate Prediction Center, the current 90-day precipitation outlook through February calls for a slightly above average probability that the western edge of the state will receive above average precipitation, with the remainder of the state receiving average precipitation for the period. There is a slightly above average probability that temperatures will be above average over the course of the 90 days along the eastern edge of the state, the remainder of the state being average.

Of course, as we look ahead, we can never rule out the wild card of Montana's inherently wide climate variability. For example, north central Montana saw a record-breaking hot spell this summer and on June 7, 2002, a 100-year rainfall event, both in little more than a year and in the midst of what were forecast to be periods of normal temperatures and precipitation. But the precipitation we have received in the mountains and at valley locations thus far is encouraging.

In summary, recovery from a prolonged cycle of drought is much like the descent from normal conditions into drought. It wavers along in fits and starts. The difference is that the trend line moves gradually upward over time with a net change that reflects improvement, rather than further deterioration of water supply and moisture conditions.

Nevada Creek Dam Rehabilitation Phase II Nearing Completion

By: Jim Domino, DNRC

The second phase of the Nevada Creek Dam Rehabilitation Project is nearing completion. Phase II involves the construction of a new spillway. The project is being completed by Johnson-Wilson Construction, Inc. from Helena, Montana.

All but one of the new spillway floor slabs have been poured, and the new walls are being placed. The stilling basin excavation is completed, and preparations are underway for the installation of riprap. The onset of cold weather has necessitated the use of tents and blankets for temperature control and protection from the weather. The concrete work was completed in late November, with full project completion in January 2004. John Sanders and Jim Beck have been sharing duties as the on-site Department of Natural Resources and Conservation (DNRC) representatives. John Sanders serves as the project manager.

The Nevada Creek Dam is located in Powell County, approximately 9 miles southeast of Helmville. The dam is owned by the DNRC and managed by DNRC's State Water Projects Bureau. The Nevada Creek Water Users Association operates the dam. The reservoir has a storage capacity of 11,152 acre-feet at the spillway crest and is used primarily for agricultural irrigation. The reservoir is also used for limited water-based recreation, primarily fishing. The dam is classified as high hazard under the Montana Dam Safety Act guidelines, which means that dam failure could result in loss of life.

The dam, constructed in 1938 by the State Water Conservation Board, is a compacted earthfill structure with an upstream cutoff trench located on Nevada Creek. Nevada Creek is a tributary to the Blackfoot River. The dam has a concrete spillway chute on the left abutment. The controlled low-level outlet consists of a 60-inch reinforced concrete arch conduit controlled by a 54-inch butterfly valve.

A study conducted by the U.S. Army Corps of Engineers in 1981 found that the dam has inadequate spillway capacity, with the spillway showing serious deterioration. The dam was classified as unsafe and in need of repair in the 1981 inspection report by the Corps of Engineers. The rehabilitation began in 2002 with the Phase I extension of the outlet conduit, placement of a new terminal outlet structure and installation of seepage drains. Completion of Phase II will bring the dam into full compliance with all current safety standards.

PHOTO BY DNRC STAFF

Nevada Creek Dam

State Launches Initiative to Rehabilitate the St. Mary Facilities

By: Paul Azevedo, DNRC

On Tuesday, November 18, approximately 230 water users, public officials, and concerned citizens from northcentral Montana attended a meeting in Havre convened by Lt. Governor Karl Ohs to discuss rehabilitation of the St. Mary Facilities of the Milk River Project. Often called the "Lifeline of the Hi-Line," the St. Mary Facilities control the trans-basin diversion of water from the St. Mary River to the North Fork of the Milk River. The purpose of the meeting was twofold: (1) raise public awareness about the urgent need to rehabilitate the aging system, and (2) begin to establish a process through which representatives from the State of Montana, federal government, Tribal governments, and Milk River basin water users can work on a comprehensive strategy to secure the needed congressional authorization and funding to rehabilitate the St. Mary Facilities.

PHOTO BY MIKE DAILEY

The two 3,200-foot-long, 90-inch-diameter siphons that convey water across the St. Mary River are designed to handle 850 cfs.

Built, owned, and operated by the U.S. Bureau of Reclamation (USBR), the St. Mary Facilities consist of a storage dam (Sherburne Dam), diversion dam, headgate, 29 miles of canal, two sets of steel siphons, and five concrete drop structures. The system is located entirely on the Blackfeet Reservation in Glacier County.

The St. Mary Facilities have been in operation for over 85 years with only minor repairs and improvements since original construction. Most of the structures have exceeded their design life and are in need of major repairs or replacement. The capacity of the system has dropped from a design capacity of 850 cubic feet per second (cfs) to approximately 670 cfs. The steel siphons have slope stability problems and leaks, and the concrete in the drop structures is severely deteriorating. Landslides along the canal and the condition of the structures make the canal unreliable as a water source. Failure of one of the drop structures in 2002 resulted in the canal being turned off for approximately two months during the irrigation season.

The economy of the Hi-Line region has been built around the stable water supply provided by the St. Mary Facilities. Without the needed rehabilitation the aging system may soon suffer a catastrophic failure. Loss of the St. Mary Facilities would have a disastrous economic impact on the Milk River Basin and the state of Montana in general.

The St. Mary Facilities

The Milk River Project was authorized by Secretary of the Interior Ethan Allen Hitchcock on March 4, 1903, as one of the first irrigation projects initiated by the new Reclamation Service (now USBR) under the Reclamation Act of 1902. The objective for the project was to provide a stable source of water for irrigation of the lower Milk River valley. Early settlers had learned that natural flows in the Milk River did not provide a reliable water source for irrigation in the downstream end of the watershed. Consequently, a plan to divert water from the St. Mary River to augment flows in the Milk River was a key component of the Milk River Project. Settlers moved to the Milk River valley on the promise of a stable supply of water for irrigation.

The St. Mary Facilities begin at Sherburne Reservoir on the eastern edge of Glacier National Park. Water stored in Sherburne Reservoir is released to Swiftcurrent Creek and di-

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verted to Lower St. Mary Lake via the Swiftcurrent Dike. From Lower St. Mary Lake, water flows into the St. Mary River and is diverted into the St. Mary Canal via the St. Mary Diversion Dam located 0.75 miles downstream. The canal follows the east side of the St. Mary River and crosses the river 9.5 miles below the diversion through two 90-inch, riveted steel-plate siphons 3,600 feet in length. Eight miles below the St. Mary crossing, a second set of riveted steel-plate siphons, 78 inches in diameter and 1,405 feet long, conveys the water across Hall's Coulee. A series of five concrete drops at the lower end of the 29-mile canal provide a total fall of 214 feet to the point where the water is discharged into the North Fork of the Milk River. On average, 150,000 acre-feet of water per year are transferred over the Hudson Bay/Gulf of Mexico divide to the North Fork of the Milk River. The water then flows for 216 miles through Alberta, Canada, before returning to Montana, where it is stored in Fresno Reservoir 14 miles west of Havre. Releases from Fresno Reservoir provide irrigation and municipal water along the Milk River to its mouth near Nashua, 200 miles to the east.

Importance of the St. Mary Facilities to the Milk River Basin

The St. Mary Facilities are the keystone to large-scale irrigated agriculture in the Milk River basin. The system provides water to irrigate over 110,000 acres on approximately 660 farms within the Bureau of Reclamation's Milk River Project. Together, these farms produce approximately 8.3 percent of all cattle and calves, 7.8 percent of all irrigated hay, and 8.2 percent of all irrigated alfalfa produced in Montana.

Although the St. Mary Facilities were originally built to provide irrigation water, the beneficiaries extend far beyond irrigated agriculture. The Milk River provides municipal water to approximately 14,000 people in the communities of Havre, Chinook, and Harlem. In addition, two rural water systems are supplied from Fresno Reservoir. Beneficiaries also include fisheries, recreation, tourism, water quality, and wildlife.

During irrigation season (May through September) in a year of normal flow, approximately 70 percent of the Milk River flow near Havre originates from the St. Mary River basin. In dry years, the imported water may make up to 90 percent of the Milk River flows past Havre. During the drought of 2001, 95 percent of the available water in the Milk River at Havre originated in the St. Mary River basin!

As authorized in 1903, the Milk River Project was a single-use irrigation project. At the time, irrigated agriculture was seen as the primary beneficiary of project construction. As a result, over the last 85 years, 100 percent of the cost to operate and maintain project infrastructure, including the St. Mary Facilities, has been borne by irrigators within the project through an annual assessment on their irrigated lands. However, according to USBR, ongoing costs of maintaining the aging system, including the St. Mary Facilities, exceed the irrigators' operation and maintenance payments. As a result, the St. Mary Facilities have deteriorated to the point that replacement and major rehabilitation are necessary. Since 1999, the State of Montana has awarded over $400,000 in grants, and the eight irrigation districts within the Milk River Project have contributed $200,000 for crucial repairs, merely to keep the system operating in some capacity.

According to an appraisal level study completed by USBR in 2003, it will cost approximately $90 million to rehabilitate the St. Mary Facilities back to the original design capacity of 850 cfs. USBR says that it does not have the money. According to reclamation law, 100 percent of the cost must be borne primarily by the authorized beneficiaries of the water. In the case of the St. Mary Facilities, the cost would be borne primarily by the Milk River Project irrigators and to a lesser extent by the municipalities of Havre, Chinook, and Harlem. However, before any work can began, a feasibility study on the project must be prepared. The feasibility study must include a final engineering report, National Environmental Policy Act (NEPA) compliance documentation, and a cultural resources survey.

At the November 18 meeting in Havre, representatives from DNRC unveiled a draft action plan for pursuing rehabilitation of the St. Mary Facilities. The State's approach is based on the belief that a partnership between basin water users (irrigation, municipal, business, recreation, fisheries, etc.), State government, Tribal government, and the federal government is the most promising course of action for pursuing rehabilitation of the system. The State's proposed approach includes forming a St. Mary Rehabilitation Working Group charged with developing a workable solution for rehabilitating the aging system as soon as possible. The working group will be chaired by Lt. Governor Ohs and will be composed of local water users, concerned citizens, and state, Tribal, and federal officials with an interest in rehabilitating the system. Staffing and technical support will be provided by DNRC. DNRC will also establish an Inter-Agency Rehabilitation Team to coordinate the efforts of the various state agencies that will

St Mary . . . continued on page 8

Flathead Basin Commission

The newest member of the statewide DNRC family is the Flathead Basin Commission (FBC).

FBC is a Kalispell-based watershed organization created by the Montana Legislature in 1983 to monitor and protect water quality in the Flathead River drainage. FBC had been administratively attached to the Office of the Governor since its inception. In 2003, the legislature transferred FBC to the DNRC.

The organization functions much like a traditional watershed group, with a broad mix of more than 20 agency and citizen members who meet regularly to design and coordinate ongoing monitoring and watershed restoration projects. By statute, FBC is required to meet only twice a year, but it has traditionally met every other month, rotating meetings among the primary communities in Lake and Flathead Counties to provide better opportunities for public involvement.

Because of the size of the Flathead Basin and its environmental and economic importance, the Commission has a broad-based membership. Six citizen members, appointed by the governor, serve three year terms. Flathead residents Art Vail, Marilyn Wood, Gary Wicks, Paul Smiley, Everit Sliter, and Bruce Tutvedt are the current FBC citizen members. Mr. Wicks is a former DNRC director. Agency members include the superintendent of Glacier National Park; the supervisor of the Flathead National Forest; a councilperson of the Confederated Salish and Kootenai Tribes; other representatives of federal, state, and local land-managing and regulatory agencies; and a representative of the premier of British Columbia. Included are two DNRC employees: Jon Dahlberg, area manager of the Northwestern Land Office, and Rich Moy, chief of WRD's Water Management Bureau. The current chair is Lake County Representative Dave DeGrandpre of Charlo, who is also head of the Lake County Planning Department.

Mark Holston

The commission aggressively seeks funding opportunities and depends upon the receipt of grant funds to carry out its projects, which are designed to improve water quality in Flathead Lake and other water bodies in the drainage. Funding sources have included the 319, Renewable Resource, 104(b)(3), and (U.S. Environmental Protection Agency's) Watershed Initiative Programs. FBC has also received money from nongovernmental sources such as the Bonneville Environmental Foundation. In recent years, FBC has received over $1 million in grants for watershed restoration, education, monitoring, and other activities.

For instance, FBC's Volunteer Monitoring Program, which has been in existence for 12 years, involves over 50 local citizens who collect water quality information on lakes and streams. The Voluntary Nutrient Reduction Strategy, another FBC program showing a great deal of promise, uses landowner education and low cost, on-the-ground projects to reduce nonpoint source pollution and improve water quality.

FBC's sole staff member is Mark Holston, who has been the public information officer for FBC since 1990 and is located in Kalispell. With a background in journalism, he's also a contributing editor to a number of national and international publications. "Being part of the DNRC family is great," said Mark. "People are going out of their way to assist FBC, and I feel very positive about the long-term benefits of the association."

For more information on Flathead Basin Commission, visit www.digisys.net/fbc or call 406 752-0081.

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be involved in the project. In addition, the DNRC is working with project stakeholders to seek legislation to secure congressional authorization and funding to prepare a feasibility study on rehabilitation of the system. Once the feasibility study is complete, legislation will be drafted to secure congressional authorization and funding to design and construct the preferred alternative for rehabilitating the system and address environmental requirements and mitigation.

In addition to the huge monetary cost, rehabilitating the St. Mary Facilities would involve complex political and legal considerations. USBR studies indicate that the St. Mary diversion facilities are having a negative impact on bull trout (*Salvelinus confluentus*), which are listed as a threatened species. Rehabilitation of the system would involve two federal Indian reserved water right compacts. The Fort Belknap Water Rights Compact is predicated on the continued viability of the St. Mary Facilities to deliver water to the Milk River basin. The compact is a delicate negotiated balance of water rights, including the Gros Ventre and Assiniboine Tribes' right to essentially all of the natural flow of the Milk River, subject to the claims of the Blackfeet Nation. The St. Mary Facilities are located on the Blackfeet Indian Reservation. The State and the Blackfeet Tribe are in negotiations for a water rights compact that will include claims for water from the St. Mary and Milk rivers. The Blackfeet Tribe must be consulted on any rehabilitation of the St. Mary Facilities. Canadian and U.S. differences must be worked out over interpretation of the 1921 International Joint Commission Order on apportioning flows of the St. Mary and Milk rivers.

In the effort to build a broad collaboration Paul Azevedo with DNRC's Water Resources Division has been named state coordinator for the rehabilitation of the St. Mary Facilities. For additional information, contact Paul at the DNRC Water Management Bureau, P.O. Box 201601, Helena MT 59620-1601. phone 406-444-6635, E-mail: pazevedo@state.mt.us.

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MONTANA LEGISLATURE ACTS ON WATER ISSUES

OUR WINTER ISSUE OF WATER LINES LISTED A NUMBER OF LEGISLATIVE BILLS THAT WERE DRAFTED REGARDING WATER ISSUES. Now, as the 55th session of the Montana Legislature draws to a close, we are bringing you up to date on those bills. At this printing, legislators have taken the following actions:

• **HB0071** - Renewable Resource Loans for Emergencies: An act increasing the emergency loan cap for the Renewable Resource Grant and Loan Program from $1 million to $10 million.

Signed by Governor: 3/13/97
Effective Date: 3/13/97

• **HB0120** - Water Use Permits in Muddy Creek Drainage: An act making permit applications in the Muddy Creek drainage (Cascade and Teton Counties) an exception to the upper Missouri River basin closure. It allows a permit to be granted to use excess water to prevent significant impacts on adjoining lands. As a conservation measure, a permit is allowed if it will help control erosion in the Muddy Creek drainage.

Signed by Governor: 4/30/97
Effective Date: 10/1/97

• **HB0283** - Water Rights Compact between the U.S. Fish and Wildlife Service and the State of Montana: An act ratifying a reserved water rights compact between the U.S. Fish and Wildlife Service and the State of Montana to settle any and all claims to water for Black Coulee and Benton Lake National Wildlife Refuges administered by the U.S. Fish and Wildlife Service within the state of Montana. The compact is in the process of receiving final approval from the federal Departments of the Interior and Justice.

Signed by Governor: 3/25/97
Effective Date: 10/1/97

• **HB0300** - An act appropriating money to the Department of Natural Resources and Conservation from the Renewable Resource Grant and Loan State Special Revenue Account for a grant to the Glen Lake Irrigation District for needed repairs to Costich Dam.

Bill Killed: 2/12/97

• **SB0097** - Water Permits and Change Authorizations: An act revising the Montana Water Use Act to generally negate court rulings that impacted on the Department of Natural Resources and Conservation's water permitting and change authorization processes. The bill continues the permit and change authorization processes. The act clearly distinguishes federal reserved water rights from water reservations created under state law. The permit criteria have been clarified to reflect that the agency applies a water availability test considering physical and legal availability and a defined adverse effect test. The language reflects recent department practices. The bill makes it clear that the permit process, which results in the issuance of provisional

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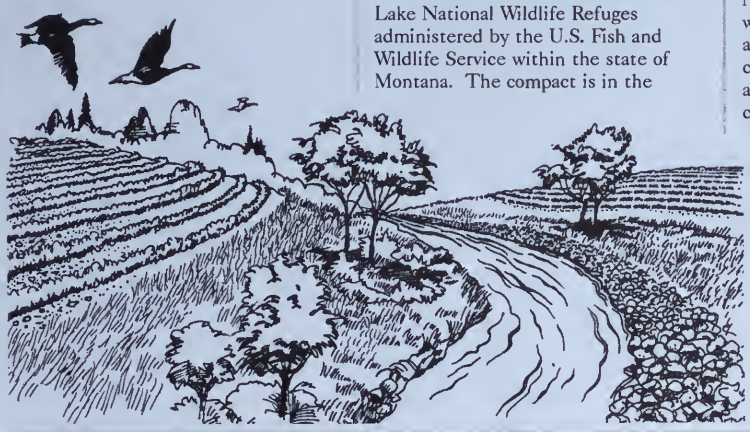

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PREPARING FOR SPRING RUNOFF

THE WATER CONTENT OF THE SNOW IS ABOUT 60 PERCENT ABOVE NORMAL IN THE MOUNTAINS ABOVE THE MISSOURI AND THE YELLOWSTONE RIVERS, AND NEW RECORDS HAVE BEEN SET IN SOME LOCATIONS.

Snowpack in the Clark Fork, Bitterroot, and Flathead basins is 50 percent more than usual, and at least 30 percent above normal in Montana's other major river basins. Consequently, rivers and streams are likely to run very high this spring. Peak flows in some places could exceed previous all time maximums, and flooding is likely. High flows impact reservoirs and dams, as well, and can pose the threat of overtopping and washing out a dam.

DNRC's Dam Safety Program is providing data about snowpack, streamflow, and sources of weather and emergency response information. Major dam operators in Montana are already dropping reservoirs to springtime levels well below normal, and owners of private dams are being reminded that reducing storage now will provide room to store flood flows later. The program has also prepared a checklist, covering such items as keeping spillways clear of debris and ice, that will help dam owners prevent problems. Through newsletters and news releases, program staff have offered to consult with dam owners or visit individual dam sites to offer suggestions on ways to prevent dam failures.

The Floodplain Management Program has been assisting local county and city officials and answering questions about floodplain insurance and other technical matters involving floodplain regulations. DNRC has a standing agreement with the Department of Transportation to have aerial photos taken in floodplain areas to assist in floodplain delineations and damage estimates.

Adapted with permission from DNRConversation, April 1997, Vol. 3, No. 2

RUBY VALLEY RANCHER CO-CHAIRS TASK FORCE

RUBY VALLEY RANCHER GEORGE SWAN HAS BEEN INSTRUMENTAL IN FORGING AGREEMENTS ON WATER RESOURCE ISSUES THAT HAVE LED TO ACTION IN THE RUBY RIVER WATERSHED.

Swan is the co-chair of the Ruby River Reservoir Task Force, a group appointed by the Department of Natural Resources and Conservation (DNRC) in October 1994, after a fish kill occurred in the Ruby River below the reservoir. After only eight months, the task force had reached consensus on a management strategy that protects fish habitat by ensuring there is water in the reservoir as well as the river, while at the same time preserving the rights of irrigators.

After a Department of Fish, Wildlife & Parks (DFWP) proposal to purchase an easement to provide public fishing access to the Ruby River met with controversy, Swan and Ruby River Reservoir Task Force co-chair Paul Moseley appealed to Governor Racicot to allow local task force members to develop an alternative proposal. Racicot agreed, and the Ruby River Access Task Force was formed with Swan serving as co-chair. The Access Task Force accomplished in five months what many thought would be impossible. They developed an alternative plan and provided DFWP with a list of landowners who would be willing to negotiate with the department.

Although none of this could have been accomplished without the efforts of many individuals and the support of the Ruby Valley community, George Swan played a pivotal role. Gary Fritz, administrator of DNRC's Water Resources Division, remarked that "George is an articulate and forceful spokesperson for the Ruby Valley."

Lowell Sauerbier, president of the Ruby River Water Users Association, succinctly stated, "George has good judgment."

George Swan is not content with simply forging agreements; he takes personal responsibility for ensuring that they lead to action. Swan understands the importance of acting immediately, before the momentum behind a positive agreement dissipates.

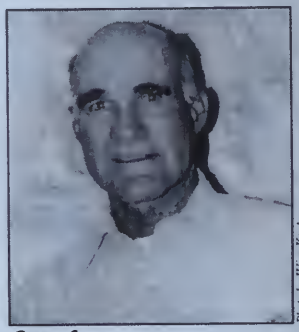

Photo by Tom Kautz

George Swan

He urged DFWP to act quickly on the fishing access plan, and he served as an independent observer in the process of negotiating with landowners. As a result, DFWP has tentative agreements to secure access at five sites on the Ruby River.

When asked why he gets involved in these issues, Swan explains, "I am concerned about the resource — it's the most vital thing we have, and we have to take care of it and ensure that it is used to its fullest extent, yet not exploited." He believes strongly in giving something back to his community. Region 3 fisheries management biologist Dick Oswald commented, "George works tirelessly to the benefit of his community."

Swan is currently working with producers from Montana State University on a videotape about the past, present, and future of the Ruby River Valley. The videotape will be suitable for broadcasting on public television. When asked what the videotape was about, Swan replied, "It's about how you can get something done if you get after it."

ARIZONA OFFICIALS AGREE TO "BANK" UNUSED COLORADO RIVER WATER

Photo by Granite Reef Underground Storage Project

Banking the water for a dusty day. The Granite Reef Underground Storage Project has begun direct groundwater recharge for the Arizona Water Banking Authority. The Bank hopes to recharge approximately 60,000 acre-feet of Colorado River water there this year.

MESA, ARIZ. — ARIZONA OFFICIALS HAVE SIGNED AGREEMENTS TO STORE MUCH OF THIS YEAR'S UNUSED ALLOTMENT OF COLORADO RIVER WATER IN AQUIFERS.

By banking the water, the state of Arizona halts California from siphoning off the portion of Arizona's annual allotment of 2.8 million acre-feet that goes unused — about 500,000 acre-feet in 1996. The banked water will be available to Arizona cities in case of drought or if supplies from the Colorado are reduced.

Gov. Fife Symington called the agreements with the state, the Central Arizona Project, and seven irrigation districts in Maricopa and Pinal counties historic.

"Thanks to the water bank, rather than watch as our water is siphoned off to Hollywood, we'll bring it home to Arizona where it belongs," Symington said.

The Arizona Water Banking Authority was created last year in part to address the loss of the state's share of Colorado River water to thirsty Southern California and the potential for losses to fast-growing Nevada.

For years, Arizona and five other states dependent on Colorado water did not need their allocated shares, allowing California to take more. But as the West's population surged, those states have urged the government to rein in California.

Water officials in Southern California, which rely on the Colorado for 70 percent of its water supplies, had advance warning of Arizona's intent to store its surplus allotment.

In a recent speech to the Colorado River Water Users Association, Interior Secretary Bruce Babbitt warned Southern California that it must curb Colorado River water use or face federal intervention. California's annual entitlement of Colorado River water is 4.4 million acre-feet.

Jay Malinowski, chief of operations for the Metropolitan Water District (MWD) of Southern California, said last week that he didn't expect Arizona's decision to have an immediate effect on his state.

"We're not jumping up and down and ranting and raving," Malinowski said. "It's an appropriate thing for Arizona to do. We'd do no differently, given the opportunity."

Because the Colorado River is running at full capacity, Malinowski doesn't expect the loss of Arizona's water to have any effect for at least two or three years. MWD has 90,000 acre-feet stored under contract in Arizona," he said.

"In the future, other water districts in California might consider buying some of Arizona's stored surplus, as well," he added.

Plans call for the unused 260,000 acre-feet to be delivered into central and southern Arizona via Central Arizona Project's aqueduct. There it will be stored underground in existing aquifers or through water exchanges with irrigation districts that pump groundwater.

"The underground storage also could be used to respond to Indian water claims in the future," Symington said.

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SOUTHWEST FLORIDA HAVING DRIEST SPELL IN A DECADE

SARASOTA, FLA. (AP) — THERE'S NO END IN SIGHT TO SOUTHWEST FLORIDA'S DRIEST WEATHER IN MORE THAN A DECADE AND PLEAS FOR CONSERVATION HAVEN'T HELPED.

Rainfall in the past 11 months has been more than a foot below normal, sending stream and groundwater levels to record lows in some areas. Meanwhile, government officials' pleas for people to conserve water seem to be falling on deaf ears.

The problem is particularly acute in the southernmost portion of the water management district, including Charlotte County and the city of North Port, that get their water from the rainfall-dependent Peace River. Early last month, the river was at just 15 percent of its normal level.

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MONTANA LEGISLATURE ACTS ON WATER ISSUES

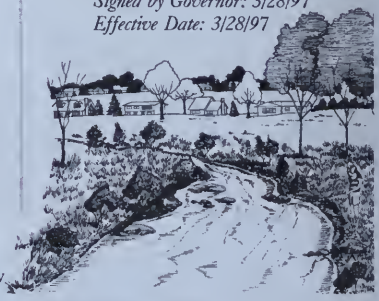
(Continued from Page 1)

permits, should continue in Montana while the adjudication process is pending. The law also clarifies the process for modifying or revoking provisional permits after an adjudication is complete. The law creates a priority for water cases certified under the permitting and change authorization statutes when certified to court and transferred to the Chief Water Judge. The bill applies both within and outside of the exterior boundaries of federal reservations, including Indian reservations. The bill creates a new statute under which the department and a tribal government may enter into water administration agreements pending the quantification of federal reserved water rights within the exterior boundaries of an Indian reservation.

Signed by Governor: 5/1/97
Effective Date: 5/1/97

- **SB0108** - Water Adjudication: An act generally revising the water adjudication laws. Specifically ,the bill allows the Water Court in adjudication proceedings to adjudicate the issue of abandonment of existing water rights using post-1973 evidence. Regarding decrees issued after the effective date, the bill provides that claimants must object to the initial decree or run the risk of waiving their objections unless substantial reasons can be given as to why an earlier objection was not made. The bill further amends the law to allow the entry of enforceable temporary, preliminary decrees for either state-based rights or federal reserved rights, as necessary. This allows the Water Court to adjudicate water right claims, or approve federal reserved water right compacts, when necessary and without the need to wai until the other types of claims in the same basin are ready to proceed. The bill also allows claimants to amend their claims or objections at any time before a final decision of the Water Court on the claim or objection. A new section has been added to the adjudication laws to allow counter-objections in the same manner as counter-objections are allowed in other civil actions. Additionally, the bill authorizes referral of adjudication cases to a settlement master or a mediator. Finally, the bill clarifies the jurisdiction of the district court and the Water Court to clarify the process for administering and enforcing water rights while the adjudication is pending.

Signed by Governor: 3/28/97
Effective Date: 3/28/97



WATER INSIDE LINES

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WATER LINES

NEWS FROM THE WATER RESOURCES DIVISION
MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION • SPRING 1998

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MISSION: TO PROVIDE THE MOST BENEFIT, THROUGH THE BEST USE, OF THE STATE'S WATER RESOURCES FOR THE PEOPLE OF MONTANA.

DEPARTMENT NEWS

FLINT CREEK RETURN FLOW STUDY

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HELENA, MONTANA

by Terry Voeller and Kirk Waren

IRRIGATORS HAVE LONG BEEN AWARE OF THE IMPORTANCE THAT AGRICULTURE RETURN FLOWS HAVE IN THEIR BASIN. In a sense, the aquifers storing return flows below the ground, can be envisioned as huge sponges that soak in water and then release this water as return flow at a later time. Most of this stored water comes from the so-called "inefficiencies" of irrigation. When water is diverted for irrigation, a significant portion of the water is not used by plants, but instead is either stored underground in the aquifer or returned directly into the stream.

Although high streamflows in the spring have always recharged aquifers linked to these streams, this amount is small when compared to the increased groundwater storage added by irrigation in many areas. In fact, irrigation has altered natural runoff patterns by lowering streamflows in the spring and summer and increasing them in the fall and winter. These increased streamflows in the fall and winter are directly attributable to the release of groundwater storage of return flows.

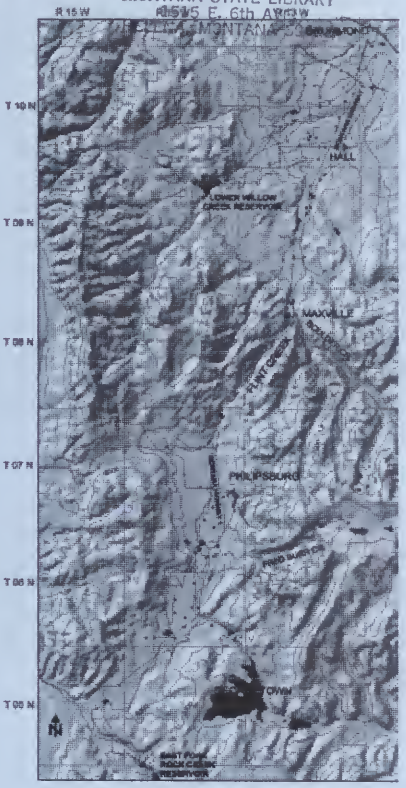
The importance of return flows in each basin is dependent on geology, the various water rights within a basin, and the method, location, and pattern of irrigation. For example, if irrigation takes place close to a stream, the water will return quickly to the stream making the storage potential limited. If irrigation occurs along high benches or tributaries distant from the main stream, geologic conditions can slow return flows for several months.

An excellent example of return flows and their complexities exists in the Philipsburg - Drummond area, which Flint Creek runs through. Water rights were established in the basin prior to 1900 for both mining and agriculture.

In 1938, irrigation changed dramatically with the completion of the East Fork Rock Creek Reservoir by the predecessor to the Montana Department of Natural Resources and Conservation (DNRC). All of a sudden, considerably more water was being put into Flint Creek from the neighboring Rock Creek drainage. This water is paid for through contracts.

A large portion of the contract water seeps into the groundwater from flood irrigation and returns later for use farther downstream. But this return flow water is not a different color, and many downstream water rights are partially filled from this water, whether the users have contracts for it or not.

In 1993, Eugene Manley, a longtime rancher in the Flint Creek basin, and a number of other water users asked the U.S. Bureau of Reclamation in Boise, Idaho, to conduct a return flow study and to assist in



Flint Creek Basin

(Continued on back page)

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PEAKS TO PRAIRIES:

A Conference on Watershed Stewardship

A CONFERENCE ON WATERSHED STEWARDSHIP WILL BE HELD ON SEPTEMBER 27-30, 1998, IN RAPID CITY, SOUTH DAKOTA, AT RUSHMORE PLAZA, HOLIDAY INN.

The conference will generate methods, ideas and examples of using a watershed approach to build communities and sustain the natural environment. Through stimulating interactive workshops, discussions facilitated by experienced professionals, field trips, hands-on activities, and case studies, participants will apply this new knowledge to their own situations and projects.

Keynote speakers will be Fee Busby, Deputy Chief of Technology, U.S. Natural Resources Conservation Service, and Wayne Elmore, National Riparian Service Team Leader, U.S. Bureau of Land Management. Monday's luncheon speaker will be Dan Kemmis, renowned author and Director of the Center for the Rocky Mountain West. Tuesday's dinner speaker will be Patricia Limerick, Professor of History, University of Colorado.

Interactive workshops will cover:

- Watershed grazing issues
- Floodplain management
- Wetlands
- Case studies and lessons learned from successful and failed watershed projects
- GIS/GPS and TMDL workshops
- Urban watersheds
- Source water protection
- Field trips assessing mining impacts and stream restoration and protection
- Principles and case studies concerning geomorphology
- Slope protection and erosion control

If you would like registration information, please contact:

Thorne Ecological Institute
5398 Manhattan Circle, Suite 120
Boulder, CO 80303
Phone: (303) 499-3647
FAX: (303) 499-8340

MARY ELLEN WOLFE AND THE MONTANA WATERCOURSE

MARY ELLEN HANNETT WOLFE WAS BORN IN ALBUQUERQUE, NEW MEXICO. She received a Bachelor of Arts in Secondary Education and Master of Arts in Political Science from the University of New Mexico in 1972 and 1985, respectively. She taught Civics, U.S. History, and American Problems in the Albuquerque public schools for five years before returning to graduate school to do advanced study of the American political process. Her graduate studies focused on the implementation of state and federal water policy and participatory democratic theory. She moved to Montana in 1983 with her husband and two sons.

Since moving to Montana, she has held various positions related to public policy education, policy analysis, and water resources education. As Assistant to the Public Affairs Specialist for the Montana State University (MSU) Extension Service (1985-1987) she co-authored *My Favorite Tax Is . . . A Primer on Montana Taxation*, and assisted with the development and composition of *Education for Public Decisions*, a national public policy education extension training module. As Research Associate for the 49th Parallel Institute on Canadian-American Relations at MSU (1987-1989), she was project manager of a comparative, transboundary water policy study sponsored by the Ford Foundation. She authored the paper "The Milk River: Deferred Water Policy Transitions in an International Waterway," *(Natural Resources Journal*, 1992,) which summarized the project findings. As a Research Assistant for the Local Government Center, MSU (1990-1991), she edited various publications on state and local government issues in Montana, including health policy, solid waste management, water infrastructure financing, and personnel management.

In 1991, she was hired as a Water Education Specialist for the Montana Watercourse, where she was initially charged with coordinating adult and youth water resource education projects including Project WET Montana and water rights workshops for adult audiences. While working part-time in this capacity, she authored *A Landowner's Guide to Western Water Rights*,

Mary Ellen Wolfe *Photo by Jim Bond*

published by the Montana Watercourse. She is currently the Program Director of the Montana Watercourse at Montana State University, Bozeman, where she is responsible for the program development and adult water education projects.

The Montana Watercourse was created in late 1989 after the first round of the State Water Planning Process revealed a critical need for water rights education. The mission of the Montana Watercourse is to foster lifelong stewardship of Montana's water by providing non-advocacy educational programs and materials for adults and youth.

The program has four basic components.

- Know Your Watershed: A community-based education program to advance citizens' awareness and knowledge of their local watersheds and better prepare them for informed stewardship of local, land and water resources.
- Project WET Montana (Water Education for Teachers): A teacher-training program that provides innovative lesson plans and teaching aides about Montana's water resources for Montana's youth.
- Volunteer Water Monitoring: A statewide training program to promote knowledge and stewardship of aquatic resources by teaching local volunteers the skills needed to gather accurate, non-biased water quality information.
- Wetlands Information and Education: A project to develop and provide information and training that will improve adult and youth awareness and understanding of the values and functions of Montana's wetlands.

EL NINO: WHAT'S IN STORE FOR MONTANA NEXT?

by Jesse Aber

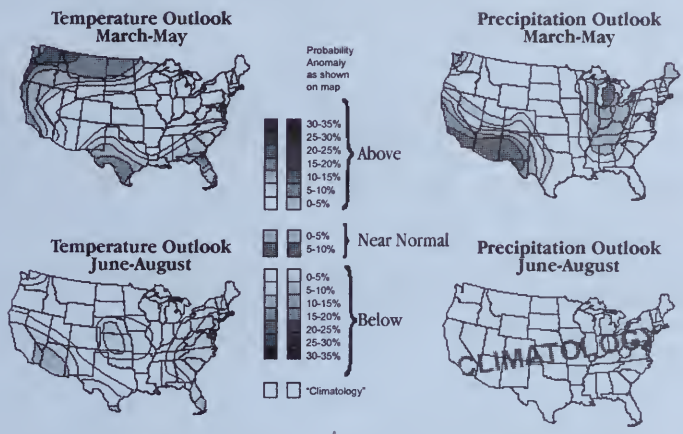
ANYONE WHO SCOFFED AT EL NINO FORECASTS LAST SUMMER MUST CERTAINLY, BY NOW, BE CONVINCED OF THE OMINOUS POWER OF THE HIGH-PROFILE CLIMATE PHENOMENON. The hype became overbearing in the media, but the climatologists did a fine job of forecasting, and undoubtedly prevented a significant amount of loss of property and life.

Montana ended up with a strong temperature anomaly for January through March, with towns on the state's High-Line seeing monthly temperature averages as much as 10 degrees or more above the historical monthly averages. Helenans were not complaining about the pleasant winter with balmy afternoons and minimal snow shoveling. The National Weather Service reported that over the past 106 winters, Great Falls had the 26th warmest and 31st driest winter of record. The story was much the same across the state.

The price to pay, however, is below average precipitation nearly statewide. Mountain snowpack is only 60-70 percent of normal. Wheat farmers have been concerned about precipitation shortfalls in places such as the Golden Triangle wheat growing region.

Helenans are recalling the seemingly endless rains of the summers of 1993 and 1997, and saying there will be a price to pay for this easy winter. Payback time could be right around the corner judging from the past two weeks of chilly, wet weather. The real action is taking place about 2,000 feet in elevation above us in headwaters of river basins as snow keeps falling almost relentlessly. The recent moisture is making water equivalents of mountain snowpack rise 5 to 10 percent in addition to the 30-year average rate of accumulation. We could recover our mountain precipitation shortfall in a hurry if the current trend continues.

What is in store for Montana this spring and summer? According to Ken Mielke, Montana Area Director of the National Weather Service, climatology in North America is much harder to forecast for summer than winter. Although El Nino is still in place and continues to dog equatorial areas of the western hemisphere with storms and related havoc, it takes a backseat to the sun, which is the big weather maker for North America in spring and summer. As summer solstice approaches and the sun assumes a higher path across our southern skies, its power to generate convection heating and precipitation increases. El Nino, however, is not completely out of the picture, as it teams up with the sun to enhance its awesome force, energizing the jet stream that gradually migrates north until it stretches across Montana from west to east forming a precipitation highway from the Pacific. In winter, the jet stream usually meets the west coast at speeds of about 100 miles per hour. This year it reached over 200 miles per hour as California was battered with big storms. In summer, the jet stream travels slower, but El Nino will speed it up on the order of 30 to 60 extra miles per hour.



According to the Climate Prediction Center of NOAA and its April 16 30 and 90-day climate forecasts (which carry strong disclaimers concerning reliability) strong, warm El Nino conditions have been in place for March and April and are confidently forecast to continue through May. The impact of El Nino, even a strong one, becomes less well defined as we move to the warm half of the year. Warmer than normal temperatures in the west are forecast for the early summer, and warm conditions are forecast to continue through mid-June.

The sea surface anomalies are expected to gradually weaken with the approach of summer and could begin weakening more rapidly if easterly trade winds are re-established in the equatorial pacific. Easterly trade winds push warmed waters away from the west coast of South America, allowing the upwelling of nutrient-rich cold water that fuels the coastal fishing economy. When climatologists see the return of the easterlies, they will forecast the breakdown of El Nino with more confidence. Some climate models are forecasting a cold phase episode, or La Nina, to begin at the end of 1998, while others will wait for the return of the easterly trade winds. Recent trends toward warmer than normal temperatures in the west, together with the warm sea surface temperatures frequently experienced along the west coast in spring, should enhance the chances of warmer than average conditions in much of the far west through late summer 1998 and in the northern Rockies in May, June, and July.

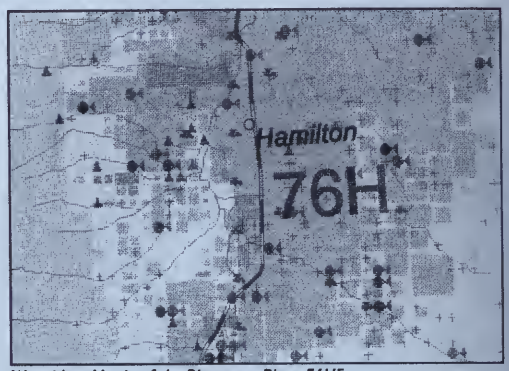
In addition to the disclaimers concerning the reliability of the long-lead forecasts is Montana's always highly variable climate. So, if you share these forecasts with your friends be sure that you mention that no one hedges their bets like climatologists, and whatever you tell them, don't mention that you heard it from me. Hope for a normal summer, but keep your rain gear and umbrellas in close reach.

GEOGRAPHIC INFORMATION SYSTEM (GIS) USES IN WATER RESOURCES

by Tracey Turek

THE MISSOULA WATER RESOURCES REGIONAL OFFICE HAS BEEN TESTING GEOGRAPHIC INFORMATION SYSTEMS (GIS) TO ILLUSTRATE THE POTENTIAL OF THIS TECHNOLOGY IN MANAGING WATER RESOURCES AT THE LOCAL LEVEL. Our office created a spacial database for the water rights in the westside subbasin of the Bitterroot River (76HF), which was decreed by the Montana Water Court in January 1998. We incorporated our claimed water right data with other coverages or layers which include roads, hydrography, the public land survey system, and the Ravalli County water resources survey data. We can view, on a computer screen, a map of irrigated acreage and simultaneously show a table of all the pertinent water right information related to each parcel.

This GIS technology allows water users to better understand their individual water right claims in relationship to any other claims within their drainage basin. Color maps can be printed to show priority among users, the location and extent of irrigated lands, and virtually any scenario relating to irrigation water rights within the basin. Both the general public and professional consultants have utilized our project to gather information and generate maps for the current objection period. We anticipate extensive use of this database for assisting the Montana Water Court in resolving objections.



Westside subbasin of the Bitterroot River, 76HF.

The project has been successful in showing how this technology can be created and utilized at the local level as part of the adjudication process. The next step is to show, through utilizing developing GIS coverages of land ownership by the counties and the Department of Revenue, how we could eliminate our current water rights ownership transfer process. Determining water right ownership electronically would greatly reduce the staff time and resources required and increase our accuracy and efficiency. Converting our current mainframe system and paper files into a graphically integrated relational database system with very powerful analysis capabilities could revolutionize our service to the state and the public. Our data could be easily accessible and utilized by other departments and the general public. We are currently working with the GIS staff in Helena and other regional offices to promote GIS throughout the Water Resources Division.

MONTANA'S SURFACE WATER AND GROUNDWATER CLOSURES

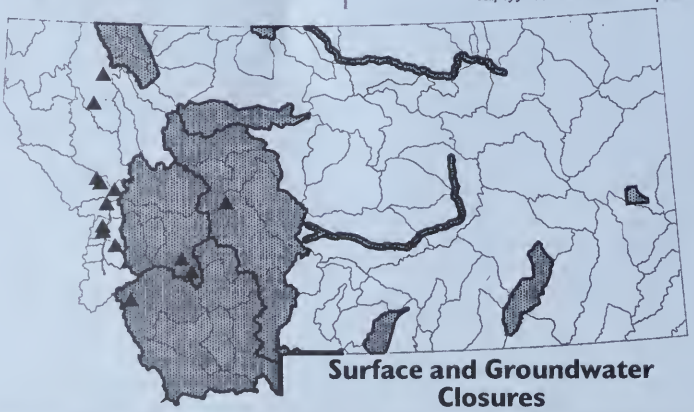
by Ann Glubczynski

WHEN WATER QUANTITY OR QUALITY ON A WATER SOURCE BECOMES A PROBLEM, ONE OF THE WAYS MONTANANS CAN DEAL WITH THE ISSUE IS TO CLOSE THAT SOURCE TO FURTHER APPROPRIATIONS OF WATER. This is called closing a basin, and there are currently 26 drainage basin and groundwater aquifer closures in the state of Montana. They are indicated on the map below by the shaded areas and black triangles.

The Water Rights Bureau has a new booklet coming soon that highlights the issue of closing basins to new water appropriations. *Montana's Surface Water and Groundwater Closures* discusses the types of closures and how new uses of water can be controlled or limited, how to go about closing a drainage basin or groundwater aquifer, and details of all the basin closures in the state.

This booklet will be available to the general public at the Water Resources Regional Offices and from the Water Rights Bureau.

Map by Jane Horton - DNRC GIS Specialist



Surface and Groundwater Closures

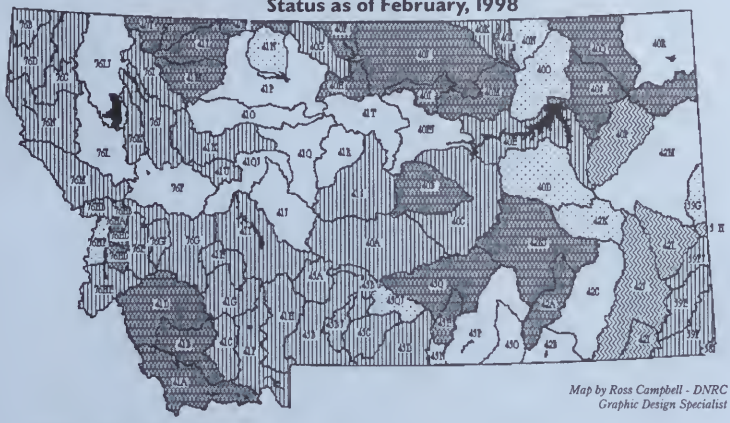
BASINS IN THE SPOTLIGHT

by Rita Nason

- On January 14, 1998, the Montana Water Court issued a Preliminary Decree for the Westside of the Bitterroot River, Sub-basin 76HF. The deadline for filing objections to claims in this basin is set for July 13, 1998.
- The Objections Notice for the Milk River below Whitewater Creek including Porcupine Creek (Basin 40O) was mailed February 4, 1998. The deadline to file a Notice of Intent to Appear was April 6, 1998.
- The Helena Water Resources Regional Office has completed claims examination in the Big Hole River (Basin 41D). DNRC anticipates sending its Summary Report to the Water Court by June 30, 1998.
- At the request of the Montana Reserved Water Rights Compact Commission, the Bozeman Water Resources Regional Office is focusing claims examination in the Red Rock Lakes area of Basin 41A.
- On September 5, 1997, the Water Court directed DNRC to commence examination of state-law-based claims filed within the boundaries of the Blackfeet Reservation in Basins 40F, 40T, 41L, and 41M. The Havre Water Resources Regional Office anticipates completion of claims examination of these four basins by April 1999.
- On August 29, 1997, the Water Court directed DNRC to examine the claimed acres irrigated and places of use for all irrigation claims in the Judith River (Basin 41S). The Lewistown Water Resources Regional Office is currently undertaking this project.
- As ordered by the Water Court on November 5, 1995, the Billings Water Resources Regional Office has completed examination of certain claims within the boundaries of the Crow Reservation in Basins 43E and 43Q.

For more information about these and other basins, contact your local DNRC Water Resources Regional Office or the Montana Water Court in Bozeman.

Montana General Adjudication
Status as of February, 1998



Map by Ross Campbell - DNRC Graphic Design Specialist

Legend
- Final Decree (6 basins)
- Preliminary Decree (8 basins)
- Temporary Preliminary Decree (35 basins + subbasins)
- Basin Currently Being Examined (19 basins)
- Basin Not Yet Examined

STATE WATER PROJECTS BUREAU SELLS THEBOE PROJECT

by Tim Kuehn

THE THEBOE LAKE PROJECT, PREVIOUSLY OWNED BY THE DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION, WAS SOLD ON JANUARY 7, 1998. The property, located west of Choteau, Montana, was auctioned by oral public bidding to the owner of adjoining land for $201,500.

The Theboe Project entails 150 acres of property including 90 acres of unimproved rangeland and a reservoir covering an additional 60 acres. The project was built in the 1930s to divert and store water from Willow Creek for irrigation purposes. Flooding during the spring of 1964 destroyed the diversion structure, and the project has not been operated since that time.

The reservoir is classified as high hazard, meaning that, if the reservoir were filled and the dam failed, the resulting flood could result in the loss of life downstream. Significant repairs are needed in order to obtain the necessary Dam Safety Operating Permit required to fill the reservoir.

Theboe Lake Project *Photo by Tim Kuehn*

The project was sold due to liability concerns, administrative costs, and the fact that the public was not deriving any benefits. Proceeds from the sale were deposited in the Renewable Resource Grant and Loan Account.

DROUGHT IN 1998?

by Jesse Aber

THE MONTANA DROUGHT ADVISORY COMMITTEE (DAC) CHARACTERIZES THE PROBABILITY FOR DROUGHT THIS SUMMER AS "MODERATE." That was the conclusion of *The Governor's Report: The Potential for Drought in Montana for 1998*, a report prepared by DAC.

The report concludes that current water supply forecasts call for below average mountain snowpack runoff both east and west of the Continental Divide for spring of 1998. Dryland agriculture is the primary area of concern due to low soil moisture in the northcentral, central, and northeast climate divisions.

For the period of March 1 to 24, precipitation was above average statewide, with the northeast division receiving 250 percent of average. The northcentral division rebounded from a moderate drought in mid-October 1997 to a moist spell in March 1998, and the central division from incipient drought to a moist spell. The Golden Triangle wheat region is located within these two divisions.

Reservoirs are in very good shape, with contents at average or above average, at all U.S. Bureau of Reclamation projects and near average at state-owned projects, with no shortages expected for water users. Water users in river basins without storage projects face a more tenuous water supply outlook since the water content of mountain snowpack statewide ranges from about 75 to 85 percent of average with the exception of the Yellowstone River basin, which is rated as average.

Climatological authorities are pointing to a demise of El Niño sometime this summer or fall, with some going as far as to say that its sister, La Niña (wet and cool like 1996-97), will return in late 1998. However, records for Montana El Niño years show that precipitation shortfalls often drag out into June before average monthly moisture returns.

The report is available on the Internet at http://www.dnrc.mt.gov/wrd/govrpt.htm.

TOSTON WETLAND RESTORATION PROJECT

by Walt Anderson

THE DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION WILL DEVELOP APPROXIMATELY 10 ACRES OF WETLAND HABITAT CALLED THE TOSTON WETLAND RESTORATION PROJECT (TWRP). The TWRP is a federally mandated wetland mitigation project resulting from the development of the Broadwater Power Project. Broadwater, a state-owned hydropower plant on the Missouri River, is licensed by the Federal Energy Regulatory Commission to generate power. In the project's license, DNRC is required to replace wetland habitat destroyed by raising the project's reservoir level to increase power production. Wildlife biologists estimated that approximately 10 acres of wetland habitat were flooded because of the increased water level.

View of the Toston Wetlands Restoration project area. *Photo by Jim Beck*

The TWRP is designed to enhance or restore the existing wetland characteristics of 36 acres of property near Toston, about 5 miles downstream from Broadwater. The property is located at the base of a slope dropping down from an upper bench area. In the area, groundwater upwells to the surface and saturates the soil, supporting a dense cover of wetland vegetation. Historically, landowners attempted to drain the property by digging drain ditches in hopes of replacing wetland vegetation with more valuable forage species. DNRC has purchased a conservation easement on the property that grants exclusive right to develop a shallow impoundment 10 to 13 acres in size and other habitat improvements.

On-site materials will be used to build the impoundment. Spoil piles leftover from drain ditch excavation will be reshaped and excess material used to build an additional 2,700 feet of low elevation berm. The total length of the berm that forms the shallow pond will be approximately 4,000 feet. A drain system will be installed to intercept groundwater flows from the upper bench and pipe them into the impoundment. If the groundwater supply is insufficient to fill the pond, supplemental water will be supplied from the nearby Broadwater-Missouri Canal. All inflow will be monitored and recorded using a battery-operated flowmeter and recorder installed in a shallow manhole. Other various concrete structures are also included for water supply and control.

The project was designed by Jim Beck, Helena Regional Engineer, with assistance from Walt Anderson, Broadwater Power Project. Both engineers worked together to prepare the contract documents and advertise for bids. DNRC's successful bidder, Rowe Construction, hopes to begin construction in April and should complete the project in 45 days or less. DNRC will supervise construction with on-site compaction testing provided by Braun Intertec.

DAM SAFETY PROGRAM UPDATE

by Michelle Lemieux

EXCITING THINGS HAVE BEEN HAPPENING WITH THE DAM SAFETY PROGRAM!

First, we have a new Dam Safety Engineer. Kurt Hafferman, formerly of the State Water Projects Bureau, who started with the Dam Safety Program in January. Kurt, who is a licensed professional engineer, brings with him extensive experience in civil engineering design and construction. Kurt has immediately stepped up to the plate, taking over the development of a new spillway standard, dam safety oversight of the Tongue River Dam, and supervision and review of several upcoming construction and design projects.

For those of you not familiar with the Dam Safety Program, a little background may be in order. The Dam Safety Program regulates all private, local government, and state-owned high hazard dams. The term "high hazard" does not refer to the condition of the dam; rather, it is an indication of the potential for loss of life downstream should the dam ever fail. Excluded from regulation are federally-owned dams and dams located on federal lands, such as Canyon Ferry, Fort Peck, Libby, and dams on U.S. Forest Service property. The Dam Safety Program has two Helena-based engineers: Michele Lemieux, who specializes in geotechnical engineering, and Kurt Hafferman, who specializes in hydraulics and hydrology. They are assisted by their supervisor, Laurence Siroky, who initiated the program back in 1985, and five regional engineers.

The most important issue facing the Montana Dam Safety Program at this time is the development of new spillway standards. Past standards were based on the occurrence of an event called the probable maximum flood. The trend in the dam safety community has been to move toward risk-based standards. A risk based standard takes into account the loss of life that may be expected, should the dam fail. In other words, a dam with a large population located immediately downstream would be required to be able to pass a very large flood through the spillway without failing. A dam with a very small population located far below the dam could be designed to pass something significantly less. The difference can mean millions of dollars to a dam owner! A committee has been created to develop a risk-based standard. They have been meeting regularly for the past six months. The committee consists of dam owners, state and federal regulators, engineers, scientists, and downstream residents. Some great progress has been made! It is expected that a new standard will be out for public review and comment by May of 1998.

Photo by Jim Bond

Pictured from left to right: Kurt Hafferman and Michelle Lemieux, Dam Safety Engineers; Laurence Siroky, Bureau Chief, Water Operations Bureau.

Another important issue being addressed is the implementation of seepage monitoring plans for all high hazard dams. The Dam Safety Program is requiring that all owners begin monitoring the seepage out of their high hazard dams. All dams leak water to some degree. This "seepage" is generally okay as long as it is controlled and soil material is not being moved. Monitoring seepage as reservoir levels increase and decrease helps determine whether a problem is developing. This is particularly important in older dams. There are four primary methods to monitor seepage: (1) measurement of seepage at toe and abutments of drains, (2) collection and measurement of flowing seepage using weirs and flumes, (3) photographs and regular inspection of nonmeasur-able seepage, and (4) measurements by piezometers and monitoring wells. The last method is one of the most important. Unfortunately, the installation of monitoring wells can be very costly for dam owners. It will be some time before we will be able to have adequate monitoring on all dams.

In order to provide training and improve communication between dam owners, regulators, and engineers, the Dam Safety Program hosts an annual conference or seminar. This year's conference will be held in Missoula on April 28, 1998, at the Holiday Park Hotel. Presentations will be on a wide variety of dam-related topics. If you need information on this conference or would like to subscribe to the Dam Safety Program's semi-annual newsletter, please call either Michele Lemieux at (406) 444-6613 or Kurt Hafferman at (406) 444-6664.

DAM SAFETY PROGRAM

hosts annual conference

This year's conference will be held in Missoula on April 28, 1998 at the Holiday Park Hotel

If more information please call Michele Lemieux at (406) 444-6613 *or* Kurt Hafferman at (406) 444-6664

FLINT CREEK RETURN FLOW STUDY

(Continued from page 1)

developing a management plan for Flint Creek. Because this study would require a great deal of "on-the-field" data collection, several other agencies with offices closer to Drummond and Philipsburg were asked to help. They included the U.S. Geological Survey, the U.S. Natural Resources Conservation Service, and the DNRC.

To oversee this study, the Granite County commissioners formed a watershed resources committee in 1994. This committee was made up of six ranchers within the Flint Creek basin who have water rights from both East Fork Rock Creek Reservoir and from Flint Creek itself. These ranchers donated a tremendous amount of time and resources to ensure that the end result would be beneficial to all water users within the basin.

Within the Flint Creek basin, over 25,000 acres of alfalfa, alfalfa grass hay, and wild hay are irrigated. The annual inflow into the basin can range from lower than 120,000 acre-feet to over 180,000 acre-feet, depending on moisture conditions. Contingent on weather, the amount of water permanently lost to the system from consumptive irrigation use can range from 30,000 to 40,000 acre-feet.

During May and June, flows are reduced by approximately 25,000 acre-feet due to irrigation; much of this decrease is caused by aquifer recharge. By August, when most aquifers are filled and streamflows are typically lowest, flow reduction from irrigation is between approximately 6,000 and 10,000 acre-feet.

In the Flint Creek basin, modification of water rights from flood to sprinkler systems would reduce water availability if more land were put into irrigation. Because of the availability of stored water in East Fork Rock Creek Reservoir, conversion from flood to sprinkler irrigation systems on existing irrigated lands would have minimal impact to ranchers who have contracts for this water. But the impact to decreed water right users, who have benefited from flood irrigation's return flows, would likely be significant during drought years.

The most dramatic effects of return flows are observed after irrigation is ceased. During a dry year, flows are more than doubled in October and November from return flows. These return flows rapidly drop off through the winter but remain measurable into the next irrigation season.

Evaluation of basin inflow and outflow shows all inflow into the Flint Creek basin can be accounted for by outflow and crop use.

It must be emphasized that the value of return flows is very dependent on basin characteristics. In many areas, return flows are a clear detriment to water quality. Examples range from the Muddy Creek erosion problem created by irrigation on the Fairfield Bench to the salinity problems in the Lower Musselshell River. These problems are directly attributable to return flows.

WATER LINES INSIDE

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- GIS Uses in Water Resources ..... Page 4
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MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION • SPRING 1996

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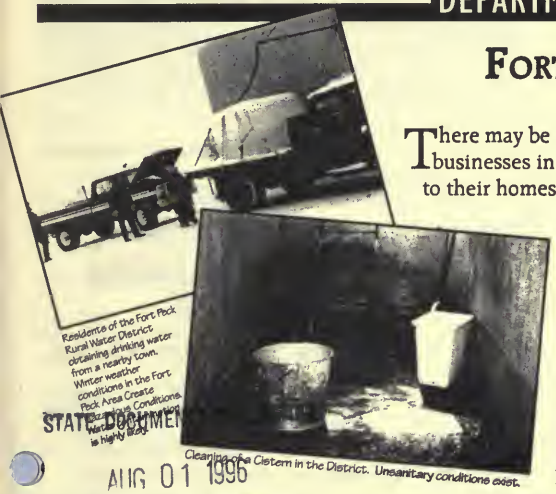
DEPARTMENT NEWS



Residents of the Fort Peck Rural Water District obtaining drinking water from a nearby town. Winter weather conditions in the Fort Peck Area Create Unsanitary Conditions. Water is highly limited.

Cleaning the Cistern in the District. Unsanitary conditions exist.

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FORT PECK RURAL WATER SUPPLY

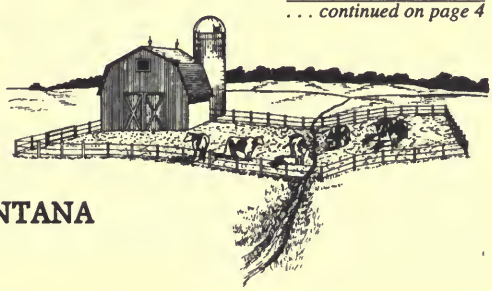
There may be a happy ending in store for the 225 homes and six businesses in northeastern Montana who have been forced to haul water to their homes and businesses. Montana's bitter winters make hauling water difficult and expensive and the water can become contaminated.

Local residents formed the Fort Peck Rural County Water District in June 1992 in an attempt to resolve the problems caused by the insufficient quantities and poor quality of the groundwater in this 24,160-acre district which partially borders Fort Peck Reservoir .

The District has joined forces with the federal Bureau of Reclamation and Corps of Engineers, MSE-HKM Engineers, and DNRC to solve the problem. Federal legislation introduced in December 1995 will provide funding for a

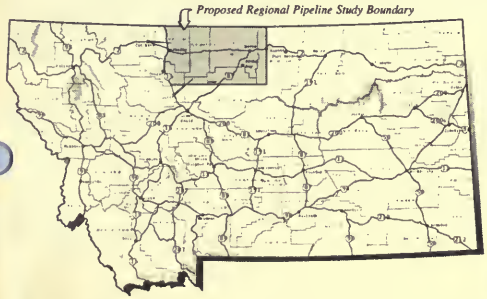
. . . continued on page 4

COLLABORATIVE RURAL WATER SOLUTIONS



ROCKY BOYS/NORTH CENTRAL MONTANA REGIONAL WATER SUPPLY SYSTEM

The budget bill that was signed by President Clinton in April included $300,000 to study the feasibility of the proposed Rocky Boys/North Central Montana Regional Water Supply System.



The proposed system would provide good quality drinking water to a large area of north central Montana. A pipeline would carry treated water from Tiber Dam to the Rocky Boy's Reservation. The Chippewa Cree Tribe is seeking the pipeline as part of a settlement of the Tribe's water rights. The pipeline would also have the capacity to serve rural water districts, communities, and individual residences in a large area of north central Montana. The current study area for the project is highlighted on the map.

PLEASE RETURN

. . . continued on page 4

RON GUSE

Ron Guse, the uncommissioned guru of water rights in Montana, was hired by the Montana Water Resources Board in July 1968 as an Engineering Technician. Ron will be retiring on July 19, 1996. Ron now manages the New Appropriations Section in the Water Rights Bureau. Ron was born and raised in the Bitterroot Valley and attended schools in Hamilton. He graduated from the University of Montana in June 1968 with a degree in geography. Over the years Ron has developed a notable comprehension of water rights law, administration, and policies. Ron's appreciation and understanding of the Prior Appropriation Doctrine may relate to his childhood exposure to water right controversies in the Bitterroot Valley.

When Ron went to work for the Montana Water Resources Board he assisted with publication of the last water resource survey books. During his initial years with the Water Resources Board, Ron developed a keen interest in new appropriations of water. In 1972 Montana redrafted its constitution, which led to the Montana Water Use Act. Ron assisted with the drafting and implementation of the Water Use Act. This Act, which led to the conception of the Water Rights Bureau, provided for the administrative appropriation of water. During the Water Use Act's adolescent years, Ron served as the assistant chief for the Water Rights Bureau. Ron worked extensively preparing and implementing water right policies, rules, and procedures.

Ron escorted the Montana Water Use Act from inception through many modifications over the years. Ron's exhaustive experience and understanding of water rights has served as a sounding board for several amendments to the Water Use Act. In addition, policy makers and water users from all over the United States have consulted with Ron on water right issues and laws. His interest and understanding of ground water control matters has commanded respect and attention from people throughout the western states.

Several major attributes have resulted in the water rights arena over the past several years. Many of those attributes reflect Ron's efforts and leadership. His congenial manner has chaperoned the professionalism and polish reflected in water rights services provided by the Department of Natural Resources and Conservation today. Ron managed the removal of a vast backlog of contested case hearings that manifested during the early 1980's. Ron received commendation from former DNRC Directors for his role and assistance in enacting legislative mandates and streamlining the water right application processes. He recently formatted and guided the development of standards of proof that water right applicants must follow. Ron's efforts have contributed substantially and impacted water rights administration practiced today.

...Ron's vast water right knowledge, his professional manner and pleasant demeanor will be missed by all.

In addition to his extensive water right undertakings, Ron has served as a member of the Board of Water Well Contractors for 17 years. As a BWWC member, Ron's service included terms as chairman and vice-chairman. Ron is typically called upon by the well drilling industry for assistance and direction involving well construction issues and controversies.

When others observe Ron's consideration and smile, it is contagious and promotes success and enjoyable work relationships. In this respect Ron has led others by example. Ron's splendid attitude and quality work have been very positive contributions to the citizens of the State of Montana. In addition to Ron's vast water right knowledge, his professional manner and pleasant demeanor will be missed by all. Those who have shared time and conversation with Ron are indebted to him. We congratulate him on his retirement and wish him the very best.

Milk River Planning and Support

As a result of encouragement from Milk River water users, the Water Resources Division has hired a new hydrologist to work full time in the Milk River Basin. Brent Espin, a hydrologist and planner new to DNRC and to state government, started working this May in the Glasgow Water Resources Regional Office.

Brent is available to work with private pumpers as well as irrigation district members, at their request, to identify areas for potential efficiency improvements, to design improvements. Brent will also assist in finding potential funding. He will offer his skills in support of local water use planning efforts and local basin working groups. Brent will be available to coordinate and act as liaison among the Tribes, the Conservation Districts, and other entities on problems identified by the Lower Missouri River Coordinated Resource Council. He will provide technical expertise on the complexities of equitably quantifying the federal reserved water rights of the Tribes. In addition, Brent will work on the international Milk River water apportionment and storage activities.

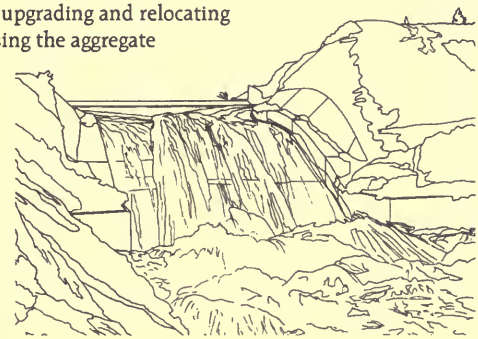
It is DNRC's goal that Brent become a trusted and respected regional professional and member of the Highline community with credibility through his ability to listen, compromise, explain, and solve problems.

Water Lines' **Summer** issue will profile Brent and the entire Water Resources Glasgow Regional Office in the "*People in Water*" section . . . so stay tuned!

Tongue River Basin Project

The U.S. Bureau of Reclamation, the Northern Cheyenne Tribe, and the Montana DNRC recently completed the environmental impact statement and signed the Record of Decision identifying the final course of action for the Tongue River Basin Project in southeastern Montana. Final design for the first phase of the project is complete and the bidding process has begun. It has been a monumental task on an accelerated time schedule. More than 20 Water Resources Division employees have responded to the call and have willingly worked many long stressful hours through the winter and spring. Incredibly, we are right on schedule!

Construction of the project scheduled to begin in August includes upgrading and relocating portions of Big Horn County Road No.380, and mining and processing the aggregate necessary for the project. Construction of the spillway will begin in early 1997. Relocation of State Park recreational facilities will begin in late 1996.



The Project will alleviate dam safety concerns, provide up to an additional 20,000 acre-feet of water to the Northern Cheyenne Tribe, and provide for fish and wildlife enhancement projects in the Tongue River Basin. These project goals are all components of the Northern Cheyenne Indian Reserved Water Rights Settlement Act of 1992.

continued from page 1

Fort Peck . . .

pressurized water supply to more than 600 people. During the grazing season, livestock will also benefit from the project. The legislation has been passed by the Senate and is awaiting action in the House.

Improvements include an intake into Fort Peck Reservoir, a water treatment plant, storage tank, and distribution lines. The project will be cooperatively funded by federal, local, and state entities.

Rocky Boys/North Central . . .

The $300,000 will cover most of the cost of the feasibility study which is to be completed in February 1997. The study will be overseen by the Ad Hoc Coordinating Committee for the Rocky Boys/North Central Montana Regional Water Supply System, a group formed to promote the development of the system.

Montana Governor Marc Racicot and members of Montana's congressional delegation have been very supportive of this initiative. It has been successful so far due to the broad base of support for a regional solution to drinking water supply problems.

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Rocky Boys/North Central Montana Regional Water Supply System Task Force

L to R: Gerald Grabofsky (City of Havre), Dave Jones (Hill County Water District), Paul Russette Jr. (Chippewa Cree Tribe), Dan Keil (Tiber County Water District), Ray Wadsworth (MT Rural Water Systems, Inc.), Bruce Sunchild (Chippewa Cree Tribe)
Not Pictured: Jim Coffman (Town of Chester), Roger St. Pierre (Chippewa Cree Tribe)

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EXERCISE YOUR WATER RIGHTS

While controversy over water rights is a common occurrence during times of drought, even during wet years water shortages will likely occur during late-summer in parts of the state. If you have an existing water right and find yourself short of water you are allocated, you may need to make a "call" for your water.

Montana's water law, administered by the Department of Natural Resources and Conservation, is guided by the "doctrine of prior appropriation." This means *"first in time is the first in right."* In times of shortages, senior appropriators have the right and the duty to "call" for their water. Senior users must notify the junior users that they are not getting their water. The junior users must then allow existing flows to pass their diversions if a "call" is made.

The DNRC can provide water right information on any particular source. If needed, contact the DNRC regional office that serves your area to determine if there are junior water-right-holders on your water source. If a "call" for water is ignored, there are several remedies available, depending on your individual situation. Your DNRC regional office staff can advise you of the options available to you.

BILLINGS 657-2105
1537 Avenue D, Suite 121
Billings, MT 59102

Big Horn, Carbon, Carter, Custer, Fallon, Powder River, Prairie, Rosebud, Stillwater, Sweet Grass, Treasure, Yellowstone

BOZEMAN 586-3136
601 Nickles, Suite 2
Bozeman, MT 59715

Gallatin, Madison, Park

GLASGOW 228-2561
630 3rd Avenue South
P.O. Box 1269
Glasgow, MT 59230-1269

Daniels, Dawson, Garfield, McCone, Phillips, Richland, Roosevelt, Sheridan, Valley, Wibaux

HAVRE 265-5516
1708 West 2nd Street
P.O. Box 1828
Havre, MT 59501-1828

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PO Box 202301
1520 E. 6th Avenue
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Beaverhead, Broadwater, Deer Lodge, Jefferson, Lewis & Clark, Powell, Silver Bow

KALISPELL 752-2288
3220 Highway 93 South
P.O. Box 860
Kalispell, MT 59903-0860

Flathead, Lake, Lincoln, Sanders

LEWISTOWN 538-7459
311 West Janeaux
P.O. Box 438
Lewistown, MT 59457-0438

Cascade, Fergus, Golden Valley, Judith Basin, Meagher, Musselshell, Petroleum, Wheatland

MISSOULA 721-4284
Town & Country Shopping Center
1610 South 3rd Street West
Suite 103
P.O. Box 5004
Missoula, MT 59806-5004

Granite, Mineral, Missoula, Ravalli

NEWS FLASH

In the on-going state government reorganization, the Water Resources Division will remain part of the DNRC

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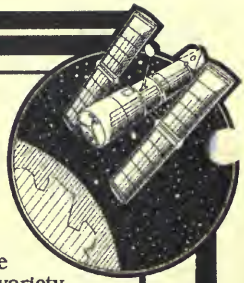
DEPARTMENT NEWS



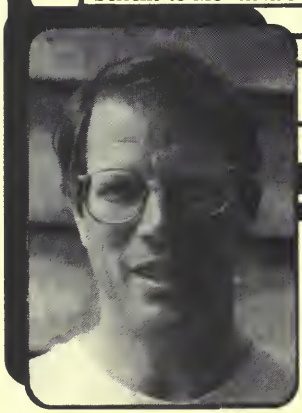
GIS BECOMES A REALITY FOR WATER RESOURCES DIVISION

The Department of Natural Resources and Conservation, specifically the Water Resources Division, has recently entered a new era of technology. The purchase of sophisticated computer equipment and software coupled with hiring geographical information system (GIS) technician Sonja Hoeglund launched the division forward, technologically speaking.

Although located in the division's Helena Regional Office, Hoeglund will provide the entire division with compiled data and maps which visually display a wide variety of water-related projects. This information will be useful to department staff and the public alike!

This technology and expertise has great possibilities for the future. The division is working toward interfacing with the Global Positioning System (GPS). This capability will be extremely beneficial in a number of ways. Well drillers could exactly pinpoint their location by longitude and latitude, instead of dealing with quarter-section land descriptions. Another example of the benefits of this technology is the assistance it will give our staff when they are verifying water right permits. A GPS allows users to locate their position electronically by latitude and longitude. This information is then transferred into a GIS computer system and can be precisely displayed on maps and graphs.

As the Division's GIS Specialist, Sonja has already completed several projects including maps of Yellowstone Controlled Groundwater areas, basin closure areas, and a general adjudication map for the Water Rights Bureau; maps of the Ruby River Basin, Sheridan County wells and Gauges, Beaverhead Groundwater Study area, and a diversions map for southwest Montana for the Water Management Bureau; and a map of the Big Hole for Water Operations. Sonja is currently working on projects involving the Bitterroot, Beaverhead, and Flathead drainages; Sheridan County; Ft. Peck Reservoir and Indian land cessions. Staff members within the entire division have been taking advantage of this new technology and Sonja's expertise. The list of future projects is endless, and is matched by the potential benefit to Montana's water users!



PEOPLE IN WATER

Stan Bradshaw has been involved in the protection and management of Montana's water for nearly two decades. Stan graduated from the University of Montana Law School in 1975 and, after a year in private practice, began working with the Department of Health and Environmental Sciences prosecuting water pollution and subdivision cases. From 1981 through 1986 he worked with the Department of Fish, Wildlife and Parks representing the department in stream access cases. Since 1987 Stan has worked as a lobbyist for Montana Trout Unlimited, working on stream access, instream flow and water quality issues. Stan worked as an employee for Trout Unlimited on a variety of fishery and water-related issues.

Although no longer employed by any particular agency, Stan remains involved as a concerned citizen in Montana water issues. He is currently working on a citizen's guide to Montana water law for the Land and Water Fund in Colorado. In addition, Stan remains involved in the Little Blackfoot Sub-Basin Steering Committee, the Blackfoot Chapter of Trout Unlimited, the Smith River Coordinated Resource Management Group, and the management of the Upper Clark Fork River Basin. Throughout his career Stan has been contributing to the management of Montana's water resources and his willingness and devotion to continue his efforts as a private citizen are a credit to his character and a great service to the people of Montana.

DEPARTMENT NEWS

LEGISLATIVE REVIEW

Following is a brief summary of legislation passed by the 1995 Legislature affecting Montana's water users.

HB 472 - *INSTREAM FLOW*

Allows the owner of an appropriated consumptive use water right to obtain a temporary change authorization to lease all or a portion of such right to an individual, association, partnership, or corporation for instream flow to benefit the fishery resource. The legislation requires compliance with all current water right processes. Only the owner of the water right may seek to enforce the temporary change authorization or object to other temporary change requests. In addition to an opportunity to object to the change of use authorization during the initial application process (current law), an appropriator may object during the temporary change renewal process and once during the term of the temporary change permit. This legislation will allow for a test of leasing feasibility while protecting the prior appropriation process and automatically sunsets in ten years.

HB 137 - *NOTICE OF DECREE*

Revises notice requirements upon issuance of decrees in the statewide adjudication of water rights to limit notice to current owners of water rights as identified in Dept. records. Previously notice had to be sent to current owner, original claimant, and all intervening owners.

Continued on page 4

REGIONAL NEWS

Warning to Nebraska irrigators

CAMBRIDGE, Neb.--Nebraska irrigators in the Republican River Basin, which is shared with neighboring Kansas, had better reduce water usage by 40 percent or face an impending lawsuit from the state of Kansas, warned J. Michael Jess, Nebraska's water resources director. Kansas water officials contend that Nebraska users are pumping some 40 percent more water from the basin than they are eligible to receive under the Republican River Compact.

Speaking before an irrigators' group at Cambridge, Jess predicted that a lawsuit from neighboring Kansas could come sometime in 1995 unless immediate steps are taken to reduce usage north of the Nebraska-Kansas line. If we're not willing to reduce consumption, we'd better be willing to go into litigation, and then we'd better plan what to do if we lose, said Jess. What we hear from Kansas is that no one up here is making an effort.

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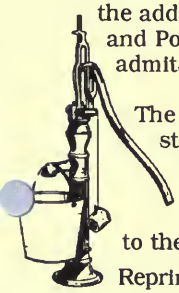
BRITISH COLUMBIA MEASURE WOULD PROHIBIT INSTREAM EXPORTING

VANCOUVER, British Columbia Legislation has been introduced in British Columbia's provincial parliament to prohibit the export of instream water and any large-scale diversions between major watersheds. The target of the bill appears to be a proposed diversion of the North Thompson River in British Columbia that promoters say would ultimately provide more water to the U.S. state of California.

According to Bill Clancy, president of Multi-National Water and Power Inc., the diversion would pump some 1,500 cubic feet of water per second into the Columbia River. In Oregon said Clancy, the added water supply would be transferred into northern California. Multi-National Water and Power has been proposing the cross-border transfer for the past decade, and Clancy admits that the idea still might be ahead of its time.



The bill now before British Columbia legislators is designed to protect endangered salmon stocks and water resources, said provincial Environment Minister Mow Sihota. While British Columbians, like their Columbia River Basin counterparts in the U.S., are unaccepting of any water project that harms salmon stocks, Clancy maintains that the cross-border transfer would generate $500 million a year in royalties and other income to the province. This government just doesn't know how to make the right moves, he said.

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Continued from page 3

SB 144 - *UPPER CLARK FORK PLAN*

Provides for a surface water permit closure with limited exceptions, continues the Upper Clark Fork River Basin Steering Committee, and establishes a temporary pilot water leasing program within the basin. Establishes a trial instream flow process similar to HB472. Requires a study of the relationship between groundwater and surface water in each subbasin. Also provides that prevailing party in the hearing regarding a water right change authorization in this basin may bring an action in district court and the court shall award costs and attorney fees to prevailing party.

SB 147 - *LEASING OF STATE WATER PROJECT LANDS AND DISPOSAL OF INACTIVE WATER PROJECTS*

Establishes a program for the leasing of all lands appurtenant to state-owned water projects. Sets guidelines for the leases and authorizes DNRC to adopt rules necessary to implement and administer the leases. Allows for the disposal of inactive projects without prior determination of market value. Clarifies the reporting requirements relating to financial statements on state-owned projects.

SB 387 - *WATER RIGHTS ADJUDICATION*

Requires the water judge to appoint a water court advisory committee to improve and expedite the water adjudication processes. Establishes the representation required on the committee. Provides that the water court may dismiss objections to rights in water court decrees if the objection pertains to a previously adjudicated element of a water right that was previously decreed.

SB 234 - *REORGANIZATION*

Revises and consolidates functions of the Dept. of Natural Resources and Conservation, Dept. of State Lands, and Dept. of Health into a Dept. of Environmental Quality and a new DNRC.

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GLOBAL WATERFRONT

Salmon are same concern of Pacific Northwest, eastern Russia

KHABAROVSK, Russia--The loss of salmon runs in this area of far eastern Russia may be the result of similar environmental problems that have prompted the salmon decline in the northwest U.S., according to Oregon State University scientists who have teamed up with Russian researchers to study the Asian area's changing environment. The Oregon researchers recently launched the project by spending three weeks on rivers in Russia's far east.

"We both have salmon, and we both have problems, and there are things we can learn from each other on both sides of the Pacific," said Jeff Rodgers, a fish biologist with the Center for the Analysis of Environmental Change at Oregon State. Rodgers, together with center director Michael Unsworth and fish biologist Daniel Bottom, focused their study on the Bikin and Khor rivers, tributaries of the Ussuri and Amur rivers.

The goal of the project, commented Bottom, was to develop a working relationship with Russian scientists by helping to restore fisheries while determining how their counterparts might relate to environmental problems in the U.S. Because of the instability of the Russian economy, Bottom said he's concerned about the region. "It seems to be very vulnerable and ripe for abuse because it's hard to tell who has control of what in terms of resources," he said. "So it makes it very easy for foreign corporations to come in if they're interested without a lot of restriction."

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MISSION: TO PROVIDE THE MOST BENEFIT, THROUGH THE BEST USE, OF THE STATE'S WATER RESOURCES FOR THE PEOPLE OF MONTANA

DEPARTMENT NEWS

DEADMAN'S BASIN DIVERSION DAM REPAIR

DEADMAN'S BASIN DIVERSION DAM IS THE INITIAL STRUCTURE OF THE 72,220 ACRE-FOOT (AF), STATE-OWNED, OFF-STREAM WATER STORAGE PROJECT LOCATED APPROXIMATELY 22 MILES EAST OF HARLOWTON. The dam is operated and maintained by the Deadman's Basin Water Users Association (DBWUA). The project was completed in 1941, rehabilitated in 1958, and has been in continuous service. The project supplies water to irrigators below the basin as far east as Melstone, irrigating approximately 16,000 acres, and is a major source of irrigation water in the lower Musselshell basin. The project has a notable influence on the agricultural economy of the Musselshell basin. The reservoir has a significant secondary use as a recreation site for the surrounding community within a 100-mile radius.

The Musselshell River, like many rivers in Montana, had a long period of high spring runoff this year. The peak flow near the main diversion dam was almost 6,000 cubic feet per second, which was above the 1-in-20 probability flood stage. As a result of the flooding, the riprap protection on the downstream side of the dam was significantly damaged and, after a prolonged period of flooding, a breach occurred under the dam, allowing water to run under the dam.

The approach to repairing the breach will be to dewater the site above the dam using a coffer dam, reroute the river around the project, dewater the site using dewatering wells, excavate the upstream and downstream sides, install a clay cutoff wall on the upstream side, backfill with native material upstream and downstream, and overburden and protect the areas above and below the upstream and downstream faces with a geosynthetic blanket and large stone riprap. Once the upstream and downstream areas have been repaired, the void under the dam will be filled. Plans are to cut through the concrete on the splash apron, exposing the void, and fill the void with either compacted fill (if it is possible to work under the apron) or with lean concrete (if there is not enough room to work.)

Deadman's Basin Diversion Dam — *Photo by Kurt Hafferman*

The Department of Natural Resources and Conservation (DNRC) is currently pursuing funding for the project through a Federal Emergency Management Agency (FEMA) disaster declaration for Wheatland County that is administered by the Montana Disaster and Emergency Services. The project has been inspected by FEMA and is currently being reviewed. It is anticipated that the review and recommendation will be completed by early October. The FEMA program will supply a 75 percent cost share grant, and the DBWUA or DNRC will be responsible for the other 25 percent.

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EMPLOYEES RECOGNIZED

Photo by Don Howard

Jim Beck, civil engineering specialist with the Helena Regional Office, receives a longevity award for 15 years of service.

On July 18, 1997, an awards ceremony was held in Constitution Park to recognize Water Resources Division staff for outstanding performance and longevity.

Special recognition plaques were given to Kurt Hafferman and Sterling Sundheim for their work on the rehabilitation of the Petrolia Project, to Bob Arrington for his work in evaluating the impacts of the Tongue River Project, and to Ron Miller for his work on obtaining funding for a Fort Peck area rural water system.

Other special recognition or "Good Job" certificates were given to Sonja Hoeglund, T. J. Reynolds, the Water Rights Bureau, Terri McLaughlin, Nancy Hughes, Mary Ellen Wolfe, Mike McLane, Mary Vandenbosch, Pat Riley, Brent Esplin, Marvin Cross, and Jan Mack.

Longevity awards were given to Rob Kingery, Jesse Aber, Ann Goetze, Tod Gass, John Hunter, Wendell Williams, and Dave Adair for 5 years of service; Allan Kuser, Bill Uthman, Diane McDuffie, and Gayle Phillips for 10 years of service; Jim Beck for 15 years of service; Chuck Brasen for 20 years of service; and Bob Clark and Jim Kindle for 25 years of service.

Congratulations to Everyone for a Job Well Done!!

WATER RESOURCES DIVISION ADMINISTRATOR RETIRES

Gary Fritz retired on June 30 after serving 18 years as administrator of the Water Resources Division. Fritz moved to Montana to work for the Water Resources Division in January 1974 and began serving as administrator in May 1979.

Fritz's commitment to working with people inside and outside of the agency to "get things done" is evident upon reviewing a few of the highlights of his career.

When the law authorizing water reservations in the Yellowstone River basin was passed, Fritz noted that, in contrast with state agencies, municipalities and agricultural water users did not have the resources to develop applications. Fritz and Ole Ueland, then administrator of the Conservation Districts Division, traveled around the basin and spoke with every conservation district and major municipality. Ueland noted that Fritz was a strong supporter of conservation districts using the water reservation process to plan for the future.

Gary Fritz *Photo by Jim Bond*

When a fish kill occurred in the Ruby River below the Ruby Reservoir, Fritz recommended that a diverse task force be established and that it be co-chaired by representatives of Ruby Valley irrigators and recreation interests. He recognized the value of local problem-solving. After visiting extensively with local residents, he saw that there was an opportunity for the task force to develop long-term solutions that would address a variety of local concerns. The success of the Ruby River Reservoir Task Force helped to launch several initiatives, including a task force that developed a proposal to provide fishing access.

Rehabilitation of the Tongue River Dam is another highlight of Fritz's career. Fritz played a critical role in compact negotiations and obtaining funding from Congress for this $64 million project. He marshaled the resources to keep the project on schedule despite many obstacles. When the department was not satisfied with a contractor's work on a draft environmental impact statement, he put together a team of agency staff that produced a superior product on schedule and under budget.

Fritz is quick to credit others for these accomplishments. For example, it was former director Karen Barclay who made the decision to fix the Tongue River Dam, and numerous department staff have worked tirelessly on the Tongue River project. This quality in a division administrator was valuable and appreciated. Gerhard Knudsen, former assistant administrator for the division, explained Fritz was very receptive to new ideas. Furthermore, he promoted ideas developed by other people, and he gave credit to people for their ideas and their work.

Fritz was committed to finding new and more efficient ways of providing services to Montanans. He streamlined the Water Resources Division by eliminating unnecessary supervisory positions. He also made a decision to decentralize certain activities to the division's eight regional offices in order to better serve citizens in all parts of the state.

Water will continue to be a central theme in his career as Fritz devotes full time to his fly-fishing outfitting business, Osprey Expeditions.

TEXAS LEGISLATURE ADOPTS UPDATED STATE WATER PLAN

AUSTIN, TEXAS — THE STATE OF TEXAS HAS UNDERGONE WHAT MANY WOULD CALL A "SEA CHANGE" IN ITS APPROACH TO WATER MANAGEMENT.

The legislature recently passed Senate Bill 1, a 202-page state water plan that has turned the planning process on its head, so to speak.

"In the past," said Tommy Knowles, deputy executive administrator of the Texas Water Development Board, "the water plan was designed from the top down, with the state dictating to the cities and municipalities. Senate Bill 1 gave us a water plan that works from the bottom up."

Each region, he said, is now required to work out its own long-range water management plan — including a drought management plan — and those regional plans will be incorporated into the state water plan.

This is one of the more significant aspects of the bill, said Knowles, and is certain to have far-reaching effects. This more collaborative structure will enable state planners and water users — from industry and irrigators to city and rural residents — to work together more effectively in managing water resources for the benefit of all, he explained.

Knowles said the drought management plan sets up a state drought response and monitoring committee, which is chaired by the Governor's Division of Emergency Management, though the governor may designate other individuals to serve on the committee as well.

The law now requires all public water systems (wholesale and retail water service providers and irrigation districts) to have drought contingency plans. Also, he said, any municipal water service providing more than 1,000 acre-feet a year, or any irrigator using more than 10,000 acre-feet a year, must now have a water conservation plan, which, he added, must be in accord with the regional water plan.

This, said Knowles, is another important step in achieving long-term planning.

The "right of capture" provision of Texas water law has not changed, but groundwater management districts are now required to have a plan of how they will manage groundwater. This will probably involve some changes in conventional practices, said Knowles, because this will be a performance-based plan audited by the state.

"All funding and permit decisions must be consistent with regional plans," said Knowles. "Eventually every aspect of water management must be in agreement with those plans."

The Texas Water Development Board (TWDB), the funding agency, and the Texas Natural Resources Conservation Commission (TNRCC), the state's regulatory agency, will be working together even more closely, he said, to achieve this goal.

The TNRCC, for example, may now consider the impacts of surface water permitting on groundwater management. Before Senate Bill 1 passed, state regulators could not do this, said Knowles. Now, they may.

"This is really a ground-breaking statute," said Knowles. "It gives the commission additional enforcement authority, enhances data collection, and coordinates funding."

Knowles explained that the $42 million plan includes an "implementing statute" which will allow coordinated use of bond money approved by voters for water supply, quality, and flood prevention. The new law requires a positive vote on a constitutional amendment on state loan programs in November, he said, in order to make use of this provision.

Another significant provision in the new law is the section on interbasin transfers. Any water transfer of this nature, said Knowles, must be based on both environmental and economic analyses in both basins, "and the benefit to those receiving the water must be larger than the detriment to those losing water. Any decision on interbasin transfers," he added, "must be multi-layered, with a large number of variables taken into account."

The law also provides mechanisms for mitigation to the basin of origin, he said.

"It's remarkable," Knowles concluded, "that such sweeping changes passed so quickly after last year's drought. Most of it will be effective September 1."

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SCIENTISTS SAY GLOBAL WATER RESOURCES NEED INTERNATIONAL COOPERATION

ALBUQUERQUE (AP) — AN INTERNATIONAL CONFERENCE ON THE GROWING PROBLEM OF GLOBAL DESERTIFICATION HAS ENDED WITH HOPES THAT NEW TECHNOLOGIES MAY HELP POORER NATIONS BETTER MANAGE THEIR WATER RESOURCES. Rivers often cross international boundaries, and that calls for regional, international solutions, said Dennis Engi, manager of strategic initiatives at Sandia National Laboratories in Albuquerque. Turkey, for example, is building dams that would also affect water supplies in Syria and Iraq downstream, said Engi." "If either of those two countries is unhappy, obviously there's going to be some political conflict," Engi said. "We have the necessary technologies to get a better handle on the available water. With our technology, they [the Turks] can simply play out the different water resource management strategies on a computer." Israel has some water conflicts with the Palestinians in the West Bank and Gaza Strip, as well, he said.

One reason for the three-day International Drylands Conference here was to let Sandia help form partnerships among countries and get some projects rolling. The workshop brought environmental researchers from around the world to discuss political problems caused by drylands. Mary Morris, an

(Continued on page 4)

WATER RESOURCES DIVISION HAS NEW ADMINISTRATOR

Photo by Jim Bond

Jack Stults

JACK STULTS IS THE NEW ADMINISTRATOR FOR THE WATER RESOURCES DIVISION. JACK REPLACES GARY FRITZ, WHO RETIRED AFTER 18 YEARS OF SERVICE.

Jack has worked in various positions for the Department of Natural Resources and Conservation for the past 13 years. He began employment with the department in 1984, working on the statewide adjudication program, first in the Helena regional office and later in the program's central office. This included writing the rules which govern the division's examination of water right claims, interaction with claimants, and reporting to the water court. He then served as division hearings officer/ examiner for four years (1990-1994) hearing and deciding water law cases. Most recently, Jack supervised the division's eight regional offices, staffed by 51 employees who implement all of the divison's programs statewide.

In addition, Jack has served for the past four years as one of five nonpartisan city commissioners for the City of Helena.

Jack has focussed on bringing consensus-based processes to the city's public decisions, and ensuring that the public is involved early and often. He hopes to apply the lessons learned as city commissioner, especially when working with controversial development, infrastructure, and budgeting issues, to his role as administrator of the Water Resources Division.

INTERNATIONAL COOPERATION

(Continued from page 3)

independent consultant from Los Angeles, said some of the governments most affected by the problem have been unwilling to fund the necessary research. She said many of them don't realize their national security could be imperiled. "Once you get countries thinking about environmental problems as a security threat, then you get the money to solve the problems," she said.

Ideas discussed here will be presented at a conference in Rome in October focusing on a United Nations treaty to halt desertification. The Convention to Combat Desertification was aimed at fighting destruction of valuable agricultural land. That agreement stems from the 1992 Earth Summit in Rio de Janeiro, Brazil. It gives priority to Africa, where desertification has had the greatest impact.

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DEPARTMENT NEWS

PLANNING PROCESS INITIATED IN UPPER TENMILE WATERSHED

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FOLLOWING A "KNOW YOUR WATERSHED" WORKSHOP IN NOVEMBER OF 1995 AND SEVERAL PRELIMINARY PLANNING MEETINGS IN SUBSEQUENT MONTHS, PERSONS AND ORGANIZATIONS WITH AN INTEREST IN THE UPPER TENMILE CREEK WATERSHED NEAR HELENA RECENTLY FORMED THE UPPER TENMILE WATERSHED STEERING GROUP.

The group consists primarily of interested Rimini citizens and personnel from the City of Helena, Lewis and Clark County, the Depart-ment of Environmental Quality , the Department of Fish, Wildlife and Parks, the Environmental Protection Agency, the U.S. Forest Service, the U.S. National Resource Conservation Service, and the U.S. Geological Survey. In addition, Peg-asus Gold Corporation (acting through its sub-sidiary, Basin Creek Mine) has been an active mem-ber of the steering group since its formation and has sponsored several activities, including recent water quality analyses and a group picnic. Ned Pettit of DNRC was chosen by the group as facilitator for the watershed planning process.

Tenmile Creek near Rimini

In recent meetings, the group has identified primary issues of concern in the basin, including stream dewatering, impacts from mining, potable water for Rimini, stream sedimentation, and logging. Further, the steering group has defined an overall mission statement and a final list of planning goals to be addressed in an Upper Tenmile Watershed Management Plan. Planning goals include enhancing or maintaining water quality in the basin, heightening public awareness and stakeholder involvement in watershed issues and management, guiding future development within the watershed, enhancing the management of water quantity in the basin, and identifying and filling data gaps. Issues specific to each of these goals and management options for their reso-lution will be the focus of future meetings.

Meetings of the Upper Tenmile Watershed Steering Group are held monthly and are open to the public. The next scheduled meeting will be on Thursday, December 12, at the Tenmile Water Treatment Facility from 6:30 to 8:30 p.m. The meeting agenda includes a presentation by a technical subcommittee dealing with water quality and streamflow issues.

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GLASGOW REGIONAL OFFICE

On June 28, 1995, the Glasgow Regional Office was the first Water Resources Regional Office to co-locate with an office from the Department of State Lands under the reorganization guidelines. This move has been very beneficial for both offices in the quality and location of the rental space, cost-effectiveness of the facilities, parking, cleaning services, and shared expenses for telephones and major equipment.

Key issues affecting the Glasgow Water Resources Regional Office include the Milk River basin, its associated controversial and complex water availability problems, the federal Missouri River Management Plan that affects storage in Fort Peck Reservoir and other large reservoirs of the upper Missouri states, the Sheridan County groundwater reservations near Medicine Lake and Dagmar that have affected new water use developments and changes, and the Fort Peck Rural Water Project which will serve 600 water users, 3,000 cattle, and 24,000 acres of land, but hinges on the support and allocation of federal funding.

The Glasgow Water Resources Regional Office serves the public regarding water resource issues and concerns in a 10-county area in northeastern Montana covering more than 18 million acres. Phillips and Valley Counties lie in the heart of the U.S. Bureau of Reclamation's 120,000-plus irrigated acre Milk River Project and encompass the majority of the irrigated-acres and water shortage problems.

Glasgow Regional Office Staff
Ron Miller, Brent Esplin, Pam Wienmeister and Bob Larson

The Glasgow staff is accountable for assisting the public in connection with the following programs.

1. New appropriations and water right changes
2. Adjudication (assistance to the Montana Water Court)
3. Records management
4. Dam safety
5. Water management
6. State water planning
7. Floodplain management
8. State water projects
9. Reserved water rights (assistance to the Compact Commission)
10. Montana Reclamation Development Grant Program
11. Board of Water Well Contractors

The Glasgow staff includes the following people:

Bob Larson has been the regional manager for the Havre office for 18 years and has also remotely supervised and been the regional manager for the Glasgow office for the past four years. Bob has a B.S. degree in civil engineering from Montana State University and, previous to his employment with DNRC, spent two years working for the Bureau of Engineers of the City of Los Angeles and five years working for the U.S. Natural Resource Conservation Service in Montana. Along with managing the Havre and Glasgow Regional Offices and the activities of employees, Bob approves water right permit applications and changes, investigates water use complaints, and assists the public and other state and federal agencies with water management issues and concerns. Besides managing the Havre and Glasgow Regional Offices, Bob owns the Sunrise Angus Ranch where he raises registered black angus cattle.

Pam Wienmeister is a program assistant and has been with the Glasgow office for 12 years. Pam processes groundwater certificates, water rights transfers, exempt water rights, stockwater pits and reservoir developments, and water right records corrections for the new appropriations program. She also provides adjudication program technical assistance and water right research, information, and public assistance. Additionally, Pam provides assistance and support for the Board of Water Well Contractors and the water management, state water projects, floodplain management, and dam safety programs.

Ron Miller serves as the new appropriations water resource specialist and has been with the Glasgow office for 11 years. New water use applications are processed by Ron, as well as changes to existing water rights. Ron also provides technical assistance and support for the adjudication, water management, state water projects, floodplain management, and dam safety programs. Ron serves as department liaison and representative throughout the Glasgow region by acting as a technical contact on various water resource management issues, serving on a multistate task force concerning water supply issues, and, most recently, testifying before U.S. Senate and House committees in support of the Fort Peck Rural Water Project and pending federal funds.

Brent Esplin started work as a water resource planner/hydrologist for the Milk River basin based in the Glasgow office as of May 6, 1996. Brent has a B.S. degree in civil engineering from Utah State University and is finishing his thesis for an M.S. degree, also in civil engineering with emphasis in water management/hydrology. Currently, Brent is actively working with (1) water users on the Milk River, (2) the U.S. Bureau of Reclamation on water delivery and distribution concerning the Milk River Project, and (3) the Saskatchewan, Canada, Interagency Technical Working Committee on a Milk River Basin Management Plan.

TONGUE RIVER PROJECT GROUND BREAKING

A ground-breaking ceremony on August 1, 1996, kicked off the first phase of the Tongue River Basin Project, which is the single largest water project ever undertaken by the State of Montana. This $63.4 million project is a partnership among three entities: the State of Montana, the Northern Cheyenne Tribe (Tribe), and the U.S. Bureau of Reclamation (USBR).

Phase One of the project includes road work, aggregate mining, and site preparation. Empire Sand and Gravel Co., Inc., of Billings was awarded the $6.3 million contract for this portion of the project. Engineering design and construction management for the entire project are being handled by ESA Consultants, Inc., headquartered in Bozeman.

DNRC Director Bud Clinch, USBR Regional Director Neil Stessman, and Llevando Fisher, president of the Tribe, spoke at the ceremony, which was held at Tongue River State Park. Others in attendance included individuals from the three participating agencies and the Department of Fish, Wildlife and Parks; Empire Sand and Gravel; ESA Consultants; the Bureau of Indian Affairs; Big Horn County; and the Tongue River Water Users Association. Montana legislators Lila Taylor and Reiny Jabs were present.

Photo by Cindy Forgey

Breaking the ground with golden shovels are (left to right): William Walksalong (Northern Cheyenne vice president), Llevando Fisher (Northern Cheyenne president), Bud Clinch (DNRC director), and Neil Stessman (USBR regional director).

EAST FORK ROCK CREEK DAM ENTERS WINTER SAFER

The rehabilitation of East Fork Rock Creek Dam southwest of Philipsburg is nearing completion. Construction equipment is still operating connecting drain pipes and installing a new berm at the downstream toe of the dam.

This quiet mountain valley was dramatically altered after June 29, 1996, when muddy water was noticed in a beaver pond below East Fork Rock Creek Dam. By July 1, the source of the cloudy water was determined to be silt coming from the dam. Emergency personnel evaluated conditions and decided to (1) evacuate the campground located immediately downstream, and (2) draw down the reservoir to take pressure off the dam.

On July 4, a sinkhole was discovered on the dam's downstream face, above the main drain. Further investigation of the main drain revealed that it was obstructed 38 feet back into the embankment. A clogged drain could cause the embankment to drain improperly and possibly threaten dam failure.

The sheriff then ordered evacuation of the stream area reaching 20 miles below the dam and asked for voluntary evacuation along the rest of Rock Creek to its confluence with the Clark Fork River. DNRC staff maintained a 24-hour watch, taking readings and measurements hourly. Ten monitoring wells were installed downstream, along with two surface water measuring weirs.

By July 18, the reservoir had been lowered to a safe level, and the evacuation order was lifted. The campground remained closed for the summer, but otherwise the drainage was open for recreation.

Exploration holes were drilled in the dam's embankment and foundation, and the main drain was excavated. In addition to the sinkhole, other dam problems included corrosion and siltation of corrugated pipe foundation drains, high water pressure in the bedrock, and degradation of the clay blanket on the east abutment upstream from the dam.

Rehabilitation of East Fork Dam began. The single main drain was replaced with three heavy duty plastic drain pipes. A chimney drain was constructed in the upstream portion of the embankment as some of the excavated materials were replaced. Another sub-

Photo by Jim Bond

Water Resources Division Engineer, Rick Bondy, by equipment excavating the downstream dam face.

surface drain was installed on the east side of the downstream toe of the dam. Finally, an existing culvert in the dam's west embankment was lined and reinforced in place, using a specialty plastic. This will dramatically improve the strength and life of a drain.

The existing clay blanket adjacent to and upstream of the dam's east abutment was exposed, rehabilitated, and thickened with an additional 16 inches of clay. It was then covered with a thicker protective layer of native material.

Monitoring wells have been drilled and will be used to evaluate and observe seepage into and through the dam and its foundation. The wells will enable engineers and dam operators to evaluate the effectiveness of the repairs.

DNRC is committed to an East Fork Rock Creek Dam rehabilitation project that provides for the safety of Rock Creek residents. A series of public meetings have been held and a meeting is scheduled with the Granite County Commissioners for Tuesday, January 7, 1997. The meeting should address the early warning system as well as update construction activities. Questions on the East Fork Dam situation should be directed to: Incident Commander Rick Bondy, (406) 444-6656.

PETROLIA DAM REHABILITATION UPDATE

The final stage of the Petrolia Dam rehabilitation project started June 17 with the demolition of the old concrete principal spillway. Demolition of the old spillway took approximately three days and, shortly thereafter COP Construction began the process of building the new concrete principal spillway. The new design called for construction of a baffled apron drop spillway chute with a roller compacted concrete (RCC) approach chute, side walls, and crest.

Throughout the structural concrete portion of the construction, the DNRC's project engineer, Kurt Hafferman, with the assistance of the Lewistown Regional Office engineering specialist Sterling Sundheim, supervised most of the construction administration duties. Kurt and Sterling's main accomplishment was to ensure that none of the concrete in the project was less than the 4,000 pounds per square inch (psi) specification. Kurt stated that, in fact, the average concrete strength was above 5,500 psi and most of the concrete reached nearly 6,000 psi.

The final phase of the project, placement of the RCC, began with the excavation of the approach chute on October 1. The Petrolia project is one of only a few projects in the nation that use RCC for a component of the main spillway, and it is the first to use RCC as an approach to a structural concrete baffled apron drop spillway. The actual placement of the RCC began October 21. The department's consulting engineer, MSE-HKM, was responsible for the construction administration duties during the RCC placement and provided the Department with quality assurance testing.

The substantial completion inspection was conducted on November 20 and, other than a few minor items that will be completed in the spring of 1997, the project is finished. Many accolades are due COP Construction for the superior workmanship on this project.

DNRC will complete all required warranty inspections within the next year and feels very confident that the Petrolia Water Users will soon become the owners of a project that has a new spillway that will meet their needs for many years to come.

Photo by Bob Clark

Petrolia Dam rehabilitation. View of Baffled Block Spillway.

WATER LINES INSIDE

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- East Fork Rock Creek Dam Update ..... Page 3
- Petrolia Dam Update ..... Page 4

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WATER LINES

NEWS FROM THE WATER RESOURCES DIVISION

MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION • FALL 1995

MISSION: TO PROVIDE THE MOST BENEFIT, THROUGH THE BEST USE, OF THE STATE'S WATER RESOURCES FOR THE PEOPLE OF MONTANA

DEPARTMENT NEWS

Petrolia Dam Rehabilitation Underway

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DNRC's Petrolia Dam rehabilitation project is progressing as planned according to Kurt Hafferman, Petrolia project engineer. COP Construction in Billings, Montana has beed selected as the project's construction contractor. The project's budget has been set at $1.2 million.

Figure 1: Petrolia Reservoir Location Map

Petrolia Dam and Reservoir are located in Petroleum County approximately 7 miles southeast of Winnett. The earthfill dam and dike were constructed in the early-1950s and several portions of it need repair. These are high-priority safety issues, and rehabilitation efforts are underway. The problem areas that will be addressed include: spillway capacity, spillway deterioration, abutment seepage, and Johnson Coulee erosion.

PLEASE RETURN

The spillway capacity at Petrolia Dam must be increased to meet Montana Dam Safety requirements. The dam is currently operating at a restricted storage capacity level because the spillway is not sufficient. A Billings engineering firm, MSE-HKM, Inc., has been hired to design a new concrete principal spillway and an earthen channel auxiliary spillway that will meet future Montana Dam Safety standards, and to provide construction administration. Measures will also be taken to correct the abutment seepage, improve embankment stability, and protect the dam and dike from erosion in Johnson Coulee.

The rehabilitation work will be accomplished in two construction phases. The first phase will involve the construction of the auxiliary spillway, installation of drainage in the left side of the dam, and regrading of the top of the dam. These projects are scheduled for fall and winter of 1995. The second phase will be the construction of the new principal spillway, scheduled to begin sometime after July 15, 1996.

DNRC does not anticipate that either phase of construction will effect normal reservoir operations. Water levels in the reservoir will be maintained at the usual seasonal levels and construction will be phased to coincide with normal reservoir operations. Reservoir levels and other environmental concerns are addressed in an environmental checklist available from DNRC. For more information call Kurt Hafferman at 406-444-6661.

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

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WAYNE WETZEL, Deputy Director	406-444-6699
GARY FRITZ, Administrator, Water Resources Division	406-444-6605
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Persons with disabilities who need an alternative accessible format of this document should contact DNRC at 1520 East Sixth Avenue, P.O. Box 202301 Helena, MT 59620 PHONE: 406-444-6603/FAX: 406-444-0533/TDD: 406-444-6873.

Existing Water Users Protected By New Permit Guidelines

Existing water right owners often feel the Water Resources Division does not require applicants for new water use permits to submit enough information to show existing water users won't be damaged by the new use. Many times, these existing water users believe their water source is fully used and any new permits issued by the Division will interfere with their use of the water.

In an effort to respond to these concerns and to ensure that applicants for new water use comply with state water law, the Division has developed guidelines that require water use applicants to submit substantial information showing there is water available and that existing water users won't be damaged by the new water use.

The new guidelines, which apply to both surface and groundwater sources, assure that applicants provide information responding to each of the permit issuance criteria required by statute. The guidelines are also intended to show new water users what is required of them early in the process.

A detailed instruction booklet is available for preparing an application for new water use. Staff in each of the eight Division Regional Offices and in Helena's central office are also available to assist applicants.

Additional information on the guidelines may be obtained by contacting the Division's Water Rights Bureau in Helena, MT (406) 444-6835, or from the Regional Offices located in Billings, Bozeman, Glasgow, Havre, Helena, Kalispell, Lewistown, and Missoula.

Big Hole Basin Planning Underway

A group of local citizens from the Big Hole River Basin have been meeting since August as the ***Big Hole Watershed Committee***. The committee was formed when a group of ranchers invited others to join them in considering ways to enhance the riparian resource and in defining and resolving problems related to low streamflows during dry years. The committee includes representatives of the following: irrigators, local governments, environmental and land preservation organizations, recreation-based businesses and the Montana Legislature.

Governor Racicot Witnesses Ruby River Success Story

"It is a truly inspiring spectacle," said Governor Marc Racicot. "We're going to need many more such New Partnerships in the future." This was Governor Racicot's reaction after touring the Ruby River valley on August 15, 1995 and witnessing the progress that has been made since thousands of fish were killed when the reservoir was drained in August, 1994.

A local task force of diverse interests came together and not only fixed the immediate problem, but created a mechanism to ensure that the problem does not reoccur. The task force includes irrigators and ranchers, outfitters, anglers and environmental groups who have banded together, with the assistance of DNRC staff, to solve the problem. An effective solution was negotiated which will protect the resource by using it properly and efficiently. "Each side tried to walk a mile in the others' shoes," said Governor Racicot. "Trust can be a stubborn crop to grow, but it must become a staple of our life here if we are to properly protect and share this special space."

The day's touring concluded with a barbecue held at the Alder school where members of the task force and Governor Racicot shared comments on the Ruby River success story.

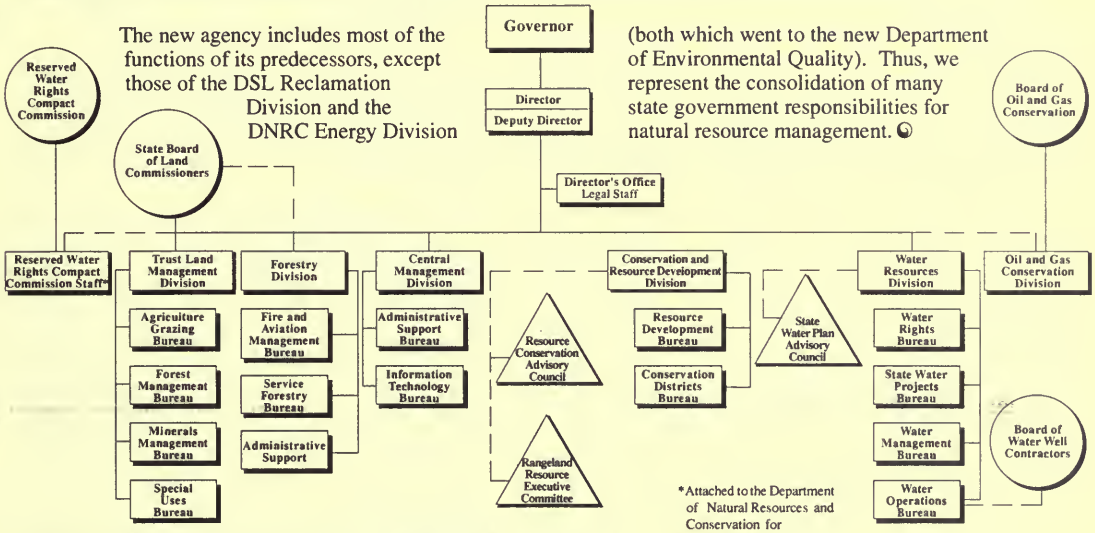
DEPARTMENT NEWS

THE NEW DNRC

As enacted by the Montana Legislature this year, the old Department of Natural Resources and Conservation, the former Board of Natural Resources and Conservation, and the former Department of State Lands vanished at midnight on June 30. Out of their ashes arose the new Department of Natural Resources and Conservation, 484 employees strong as of July 1.

The new DNRC has seven divisions--four from the old DNRC, two from the former DSL, and one, Central Management, composed of staff from both former agencies. Seven boards and commissions are attached--some make the decisions; some only give advice. Not shown are our 40 offices spanning the state--16 from the DNRC (counting Water Resources, Oil and Gas, and Conservation and Resource Development Divisions) and another 24 from the DSL.

The new agency includes most of the functions of its predecessors, except those of the DSL Reclamation Division and the DNRC Energy Division (both which went to the new Department of Environmental Quality). Thus, we represent the consolidation of many state government responsibilities for natural resource management.



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PEOPLE IN WATER

DIRECTOR *BUD CLINCH*

At the top of the new DNRC is Arthur "Bud" Clinch. Bud served as Commissioner of the former Department of State Lands from 1993 to 1995, until asked by Governor Racicot to head our agency with the July 1 reorganization.

Photo By Jim Bond

Although Bud was born and received his early education in New Jersey, he soon discovered Montana. He graduated from the University of Montana School of Forestry in 1974. His career includes forest management operations with the E/L Ranch (in Greenough, Montana), crew foreman with Champion Timerlands, safety director with the Montana Logging Association, and director of the Montana Private Forest Council. His work has won several awards from industry groups, a government agency, and a conservation organization.

Clinch, who is married and has three children, celebrated his 44th birthday last March.

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The Water Resources Division central office staff will be located in the New York Store 48 North Last Chance Gulch and the Helena Regional Office will be located nearby in the downtown area.

REGIONAL NEWS

Wyoming Sustains Court Loss

WASHINGTON — In a long-standing fight between Nebraska and Wyoming over flows of the North Platte River, the U.S. Supreme Court has rejected four "exceptions" that Wyoming officials had made to a special master's report. Principally, the justices ruled that Wyoming cannot challenge an apportionment formula for the river that allots 75 percent of the flow to Nebraska users.

While Nebraska officials claimed that the 8-1 ruling was a breakthrough in their behalf, Wyoming tended to belittle the decision. Wyoming State Engineer Jeff Fassett said the court's ruling only narrows the scope of the arguments in the event the dispute winds up in court. On the other hand, Nebraska's water resources director, Michael Jess, said that his state "continues to be open to settlement of the remaining issues, but as... Nebraska's position is continually strengthened by preliminary findings of the court and the special master, there is less reason not to go to trial."

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GLOBAL WATERFRONT

Texas Gov. Bush refuses to loan irrigation water to Mexico

MATAMOROS, Mexico — Saying he's not in a position to be giving away anybody else's water," Gov. George W. Bush has informed Mexican President Ernesto Zedillo that water owned by Texas water rights holders cannot be loaned to drought-ravaged areas of northern Mexico. The possibility remains open, however, that Texas might make some future water loans to Mexico.

Bush has followed through on his initial opposition to a request by the northeastern Mexican state of Tamaulipas to borrow some 26 billion gallons of water for failing crops. That request also was denied by the U.S. State Department.

The reluctance of Texas to provide water aid to its international neighbor apparently stems from commercial rather than humanitarian factors. In his meeting with President Zedillo, Bush was careful to state the differences between loaning irrigation water and providing emergency supplies for domestic needs. Texans are kind and generous people," he said. And if in fact there are families thirsting for water, if the crisis gets so bad that we begin to affect the health of our neighbors, I suspect that we'll figure out a way to take care of them.

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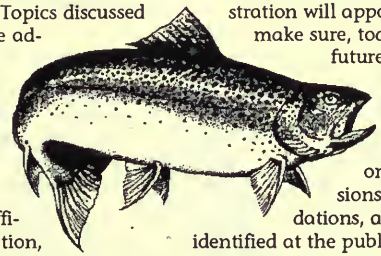
DEPARTMENT NEWS

STATE WATER PLAN UPDATE

Last May, 10 public meetings were held throughout Montana to explain the state's water plan process and solicit public comment on issues and concerns that should be addressed in the plan. Topics discussed most frequently were adjudication, water storage, surface-water and ground-water quality and management, instream flow protection and water leasing, water use efficiency and conservation, drought management, reserved water rights, public representation on state water plan committees, and cooperation among competing water users.



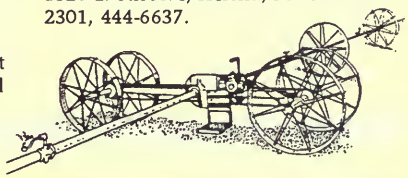
Four issues were addressed during the first planning cycle: instream flow protection, agricultural water use efficiency, federal hydropower licensing and state water rights, and Montana's water information system. The process has been and continues to be carefully monitored to ensure balanced representation on state water plan committees and to encourage cooperation among competing water users.

Governor Stan Stephens opened the State Water Plan Advisory Council's first meeting on September 13 by stating that the group is "one of the most important councils the administration will appoint. We want to make sure, today and in the future, that the needs of Montanans are met by the wise use of our water." Based on Council discussions and recommendations, as well as issues identified at the public meetings, DNRC Director Karen Barclay selected two issues to be considered during the water plan's current cycle: water storage and drought management. Due to its complexity, water storage was subdivided into policy and site criteria, financing, and regulations.

Four steering committees, each chaired by a Council member, were formed to consider these issues. A special attempt was made to appoint water user group representatives and resource managers to balance competing interests and geographical distribution. Each of these committees will define relevant problems, develop and evaluate alternative solutions, and make recommendations to the State Water Plan Advisory Council. Committee meetings began in October, and members are expected to present preliminary plan sections and recommendations to the Council in February.

After reviewing the various committee recommendations, the Council will present its recommendations to the Director, who will make the final decision on preliminary plan sections. A period of broad public review and comment will follow in 1990.

If you have any questions or comments about the state water plan or current planning cycle issues, please contact Judy Callens, Water Resources Planner, Department of Natural Resources and Conservation, 1520 E. 6th Ave, Helena, MT 59620-2301, 444-6637.



WATER RIGHTS ADJUDICATION UPDATE

The Montana Supreme Court adopted rules on July 7, 1987, to govern DNRC's water right claim examination process as part of the state's general stream adjudication. This year, the Court considered proposed changes submitted by the Water Court and DNRC and issued an order amending the rules to increase the efficiency and speed up the claim examination process.

Under Montana law, DNRC's role in the adjudication process focuses on providing assistance and information to the Water Court. The department examines claims independently and is limited to reporting facts and identifying issues before a decree is issued.

Because of a widespread interest in the adjudication program, the 1987 Legislature allocated $75,000 for an independent study of the program. The legislative Water Policy Committee administered the study and subsequently chose a Denver law firm to conduct the study. Its report concluded that Montana's adjudication ➤

(adjudication, continued)

process "with some minor legislative fine tuning can be expected to achieve the results sought by the legislature when it adopted Senate Bill 76 in 1979." The study also declared "the DNRC examination process to be efficient" and "Montana's computer-based and professionally staffed system . . . quite superior." The final report also stated that claimants "perceive they are being treated fairly by the claims examination process including DNRC's activities."

As a result of this study, the 1989 Legislature passed four bills in an effort to reduce potential conflicts and clarify existing statutes. The legislature also increased adjudication program funding. Additional staff were hired, and 20 full-time employees now work in DNRC's nine field offices to examine claims.

The Water Court, aided by DNRC's technical assistance and centralized records system, has issued 43 water right decrees, categorized in the table below.

Final and preliminary decrees include federal government rights and those of Indian tribes; temporary preliminary decrees do not.

Next year, two additional basins should be decreed: Lower Musselshell River (Basin 40C, 3,826 claims) and Ruby River (Basin 41C, 2,162 claims). With these decrees, 95,111 of the 215,000 claims filed statewide will have been decreed.

The statewide water adjudication process has stirred controversy in the past over the program's judicial and administrative aspects. However, the Supreme Court's claim examination rules and the adjudication study ordered by the legislature have laid much of this controversy to rest. The program is on track, and decrees are again being issued.

Final Decrees	6 basins	15,398 claims
Preliminary Decrees	7 basins	9,930 claims
Temporary Preliminary Decrees	30 basins	63,795 claims

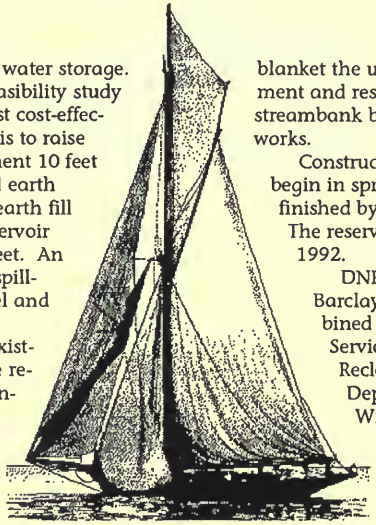
MIDDLE CREEK PROJECT

President George Bush recently signed legislation authorizing $830,000 to begin first-year construction repairs on DNRC's Middle Creek Dam south of Bozeman.

Total repair costs are estimated at $5.2 million. The state's contribution is $1.3 million. A $775,000 federal grant and $3.1 million federal loan are also expected.

Middle Creek Dam, also known as Hyalite Reservoir, supplies irrigation water to the Gallatin valley and municipal water to Bozeman and Montana State University. The reservoir also provides year-round recreational opportunities both for Montanans and non-residents.

The repairs will bring the project to current dam safety standards and provide additional water storage. A rehabilitation feasibility study shows that the most cost-effective way to do this is to raise the dam embankment 10 feet by using reinforced earth and conventional earth fill and raising the reservoir water surface 8.2 feet. An unlined auxiliary spillway with a channel and dikes will be constructed, and the existing spillway will be replaced with two concrete baffled apron drops and a channel and dike between the drops. Workers will also blanket the upstream left abutment and reslope and riprap the streambank below the outlet works.



Construction is expected to begin in spring of 1990 and be finished by the fall of 1991. The reservoir will be filled in 1992.

DNRC Director Karen Barclay credits the combined efforts of the Forest Service, the Bureau of Reclamation, and the Department of Fish, Wildlife and Parks with helping DNRC secure project funding.

PEOPLE IN WATER

WETZEL NAMED DNRC DEPUTY DIRECTOR

Wayne Wetzel has been named by DNRC Director Karen Barclay to serve as the department's deputy director.

A department employee since 1976, Wetzel has served as chief of DNRC's Facility Siting Bureau and, more recently, supervised construction of the Broadwater hydropower project at Toston Dam near Townsend.

Wetzel, who began his new job in October, succeeds Dave Darby, who left the department to accept a job as the state budget director for Governor Stan Stephens.

As deputy director, Wetzel will function as a liaison between DNRC and the state Board of Natural Resources and Conservation and will also coordinate daily activities of the department's division administrators.

SIROKY NAMED TO NATIONAL BOARD

Laurence Siroky, an assistant administrator of DNRC's Water Resources Division and head of the state's dam safety program, has been elected by western regional representatives to serve on the Association of State Dam Safety Officials' national board of directors. Siroky's term will run until September 1991.

CASH DOESN'T QUITE COMPARE

Cold cash—even to the tune of $14 million—isn't worth much when compared to thousands of acre-feet of water, say Texas officials and irrigators in their response to the recent court settlement with New Mexico over flow of the Pecos River. In a 15-year court fight, Texas had sought repayment from New Mexico for alleged violations of the 1949 Pecos River Compact.

Although attorneys for both states claimed victory in the settlement, New Mexico Attorney General Hal Stratton exclaimed that it was a "great day in the state of New Mexico." Stratton and other New Mexico officials rejoiced in the cash payment instead of assuring increased flows of the Pecos River, as Texas had sought. A water repayment could have forced a halt to irrigation farming near the New Mexico cities of Roswell and Artesia, claimed Stratton and State Engineer Steve Reynolds.

The U.S. Supreme Court, in a 1987 ruling, found that New Mexico had shortchanged its share of the river compact by 340,100 acre-feet from 1952 to 1986. Texas officials estimated that New Mexico made some $320 million off the water during that time. While the Supreme Court established new regulations governing future deliveries of Pecos River water under the compact and ruled that New Mexico would have to repay the historical shortage, the justices didn't specify whether the repayment should be made in water or in cash.

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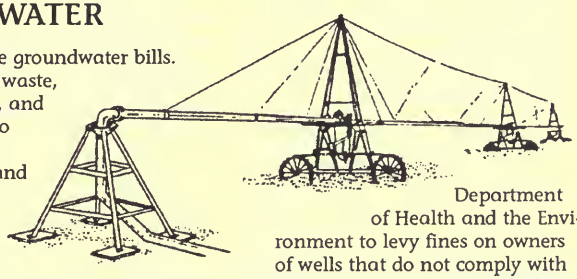
LEGISLATIVE UPDATE—GROUNDWATER

Idaho addressed its growing groundwater overdrafts by mandating the Department of Water Resources to bring withdrawals in line with recharge rates in critical areas (HB 285: Resources and Conservation Committee). The director is required to adjudicate water rights and, if he determines that withdrawals must be reduced, he must first cut use among those irrigators who have expanded their acreage under irrigation or intensified their water use since 1985.

Oregon rejected a similar approach to limiting overdrafts (SB 154), but passed three groundwater bills. SB 261 subjects waste, natural springs, and seepage water to laws governing appropriation and use of water, SB 156 allows the Water Resources Commission to impose civil penalties for illegal withdrawals, and HB 2172 gives the Water Resources Department sole jurisdiction over well regulation. And Kansas allows the Secretary of the Department of Health and the Environment to levy fines on owners of wells that do not comply with the Groundwater Exploration and Protection Act (SB 121: Committee on Energy and Natural Resources).



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INSTREAM DINOSAUR TRACKS

In normal instream flow cases, minimum streamflows are required to preserve fish or recreational uses of streams. In an unusual twist in the instream flow area, the Texas Parks and Wildlife Department is seeking suitable current of the Paluxy River to maintain prehistoric dinosaur tracks in the Dinosaur Valley State Park, located about 45 miles southwest of Fort Worth, Texas.

The state wildlife department had asked the Texas Water Commission to set minimum streamflows at 8 cubic feet per second (cfs), but the commission would grant only 2 cfs. The wildlife department has challenged the commission's ruling in court, and a decision is pending.

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WELCOME TO WATER LINES

"Water is the lifeblood of Montana." While each person subscribing to this often-used statement may have different reasons for endorsing it, one thing is certain: water use in Montana is a sensitive issue.

Montanans are concerned about how state government is handling water resource matters such as drought, water rights adjudication, stream access, water quality, and water storage. They want to know more about Montana's water, and they want to have a voice in water policy development.

Managing water resources is becoming more complex every year. It is important to recognize that these water issues are not merely state issues but are often of regional and national concern. With this in mind, Water Lines is designed to inform you not only of local water issues but regional and national issues that you may find pertinent to Montana.

The 1990s will bring expanded opportunities for water resource management in Montana. In the months ahead, we will report to you many of the programs, problems, and opportunities we all face in managing Montana's water resources. For us to do this, we would like to hear from you about the issues that concern you. Please address your comments to Gary Fritz, Administrator, DNRC Water Resources Division, 1520 E. Sixth Ave., Helena, MT 59620-2301, or call 444-6601.

Department of Natural
Resources and Conservation

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WAYNE WETZEL,
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GARY FRITZ,
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RICH MOY,
Chief, Water Management Bureau
RICK BONDY,
Chief, Engineering Bureau
LARRY HOLMAN,
Chief, Water Rights Bureau

DO YOU KNOW?

Why is the concept of a "water year" used in the water resource field instead of a calendar year?

Since most hydrologic phenomena such as streamflow runoff are seasonally affected, it is desirable to treat annual streamflow data in such a way that the runoff season is not divided between successive calendar years. The water year varies with climatic conditions in different parts of the world and generally begins when both surface- and groundwater storage are reduced to a minimum. In the United States, the U.S. Geological Survey reports runoff data for a water year from October 1 to September 30.

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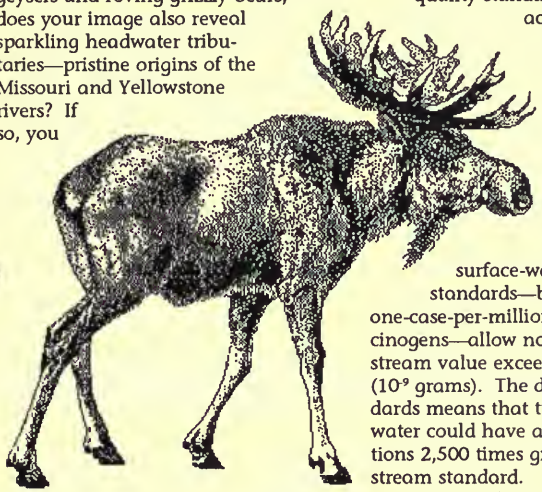
ARSENIC AND OLD FAITHFUL

Form a mental picture of Yellowstone National Park. Besides spouting geysers and roving grizzly bears, does your image also reveal sparkling headwater tributaries—pristine origins of the Missouri and Yellowstone rivers? If so, you



probably will be surprised to discover that the park's geysers and hot springs contain clear water with high arsenic levels that persist throughout much of the upper Missouri River in Montana. Bringing this issue to the forefront are stringent water quality standards adopted by the Board of Health and Environmental Sciences, coupled with the Department of Health and Environmental Science's (DHES) water reservation application to preserve instream dilution flows.

A trace-metal known for its acute and chronic health effects, arsenic is also a carcinogen commanding increasing regulatory attention from both the Environmental Protection Agency (EPA) and DHES. A confusing aspect of the arsenic problem involves two apparently contradictory water quality standards. Based on acute and chronic toxicity, federal drinking water standards limit arsenic to 50 micrograms/L (10^{-6} grams) in treated water supplies. On the other hand, Montana's surface-water (instream) standards—based on EPA's one-case-per-million risk level for carcinogens—allow no increase if an instream value exceeds 20 nanograms/L (10^{-9} grams). The difference in standards means that treated drinking water could have arsenic concentrations 2,500 times greater than the instream standard.

Strict EPA/DHES interpretation and enforcement could curtail further consumptive uses of water or other activities that would elevate arsenic concentrations in streams. The instream standard is exceeded in the Missouri, Yellowstone, and Clark Fork rivers.

For example, upper Missouri River water between Three Forks and Fort Peck Reservoir now contains arsenic concentrations 500 to 2,500 times greater than the 20-nanogram standard; Madison River's concentrations are 2,500 to 10,000 greater. A recently published Montana Bureau of Mines and Geology/DHES study shows extensive, shallow groundwater contamination in the Madison valley; domestic wells reveal levels up to 170 micrograms/L. The study identifies the problem source as long-term irrigation with Madison River water and recommends effective, relatively inexpensive, domestic well treatment methods.

Further complicating the arsenic problem's regulatory aspects are the complex geochemistry of arsenic and lack of data upon which to model the effects of land and water management decisions on arsenic concentrations. As part of the water availability study for the Missouri Basin water reservations, the Department of Natural Resources and Conservation (DNRC) formed an interagency advisory group composed of scientists and resource managers. This group is charged with evaluating options for improving the arsenic data base and developing a model capable of predicting the effects of various land and water management actions. DNRC is also working with sediment geochemists at the University of Montana to examine the role of channel and reservoir sediments in the upper Missouri River arsenic cycle.

PLEASE RETURN

TONGUE RIVER DAM PROJECT

The Tongue River Dam, located about 10 miles north of the Montana-Wyoming border, is one of 40 water development projects owned by the State of Montana. The dam's embankment is 91 feet high, and the reservoir impounds nearly 70,000 acre-feet of water. Constructed by the state during the late 1930s with financial assistance from the Public Works Administration, the Tongue River project supplies water to local coal companies, a number of small towns, and several thousand acres of irrigated land, including those on the Northern Cheyenne Reservation. During its 50-year life, the reservoir has been used extensively for recreation.

To overcome safety problems at the project, DNRC is continuing its efforts to rehabilitate the dam. Since this rehabilitation may affect a number of entities, DNRC has formed a steering committee to ensure coordination and communication among the various parties during the reconstruction. Major goals for the project involve preparing congressional legislation to secure rehabilitation funding, providing a firm water supply to existing water users, and negotiating a water rights settlement with the Northern Cheyenne Tribe.

The preferred rehabilitation alternative identified in the feasibility assessment recommends enlarging the spillway to pass the appropriate design flood and increasing the reservoir's storage level by 4 feet. This additional storage could provide flows necessary to satisfy reserved water rights claimed by the Northern Cheyenne Tribe. Providing for quantification of the tribe's water rights is an important prerequisite to using the reservation's water resources for the Northern Cheyenne's economic benefit.

Through consultation with various state and federal agencies, DNRC has developed several preliminary alternatives for environmental enhancement and mitigation as a result of project rehabilitation. These alternatives are currently being reviewed to select one for final design consideration.

CLARK FORK WATER RESERVATIONS

DNRC has completed its addendum to the Clark Fork draft environmental impact statement. This addendum examines Granite Conservation District's request to reserve water in Boulder Creek, a tributary of Flint Creek. The district proposes constructing an 8,500 acre-foot (af) reservoir in Boulder Creek. Water would be released into a canal and flow about 33 miles to irrigate 4,093 acres. The total amount of water needed to irrigate this land is 13,998 af. The land, located south of Drummond on the benches above and east of Flint Creek, is now being used for grazing.

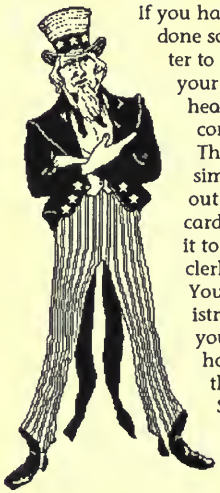
This irrigation project would substantially reduce flows in Boulder Creek. Boulder Creek's average flows at Maxville would be reduced by 13,319 af (38 percent) annually and by as much as 94 percent in September. At the mouth of Flint Creek, annual depletions would average 5,309 af, which is less than at Boulder Creek near Maxville because of irrigation return flows.

The reservoir would inundate approximately 145 acres, including a county road that provides access to Princeton and surrounding areas. Construction of a 33-mile canal would also affect an additional 206 acres. The canal route crosses over old landslides between Boulder and Gird creeks. Canal seepage in the landslide areas would be extensive with a potential for canal failure.

DNRC has determined that the proposed project's costs outweigh the benefits of irrigating and growing alfalfa on the 4,093 acres and estimates that the project will cost $30.4 million to build and operate; Granite Conservation District places the project cost at $14.2 million. The Department's economic analysis examined 300 different forecasts of crop prices and yields. The project failed to return enough revenue to overcome DNRC's cost estimate in any forecast and only exceeded the District's cost estimate in a third of the forecasts. If the project receives substantial state and federal subsidies, its development could prove financially feasible for local ranchers, benefitting about 20 ranch families. DNRC did not discover any economically feasible alternative.

Copies of the addendum have been circulated for public review; comments must be submitted by May 1, 1990. Additional copies of the addendum and the draft EIS it supplements can be obtained by calling 444-6637, or by writing to John E. Tubbs, RE: Clark Fork Reservations, Department of Natural Resources and Conservation, 1520 East Sixth Avenue, Helena, MT 59620-2301.

IF YOU WANT YOUR VOTE TO REGISTER . . . REGISTER TO VOTE



If you haven't already done so, please register to vote so that your voice will be heard in the upcoming elections. The process is simple: (1) fill out a registration card, and (2) mail it to your county clerk and recorder. You can get a registration card at your county courthouse, or contact the Secretary of State's office, Capitol Station, Helena, MT 59620.

BOARD OF NATURAL RESOURCES AND CONSERVATION

The Board of Natural Resources and Conservation is comprised of seven members appointed by the governor. The board's duties include adopting administrative rules, acting on proposed water reservations, making decisions under the Montana Major Facility Siting Act, adopting floodplain delineations, and overseeing state water project operation. Board members usually meet in Helena bimonthly or as needed.

WILLIAM A. SHIELDS, Chairman of the BNRC, has been president of the College of Great Falls since 1977 and also serves as a professor of Sociology at the college. Born in Anaconda, Dr. Shields graduated from Carroll College in 1964 and received MA and PhD degrees from the University of Pittsburgh. He and his wife have four children.

TERRY ANDERSON is the senior associate with the Political Economy Research Center in Bozeman and has taught economics at Montana State University since 1972. Mr. Anderson has published one book and co-authored another on water policy. He was also a Fulbright fellow at Canterbury University in New Zealand, where he was part of a task force researching that country's water institutions and its potential for water marketing.

LORENTS GROSFIELD owns an irrigated cattle ranch near Big Timber. He is president of the Montana Association of Conservation Districts and chairs its Water Resources Committee. Mr. Grosfield also chairs the Sweet Grass County Conservation District.

ED MCHATTON is a self-employed contractor in Lolo. He has extensive experience with flood and sprinkler irrigation systems and has worked with various federal agencies on streambank protection.

JANICE REHBERG and her husband operate a ranch outside Billings. Ms. Rehberg is a 1982 law graduate of George Washington University; she received her undergraduate degree from Washington State University. During the 1983 Legislature, Ms. Rehberg served as an administrative aide to House Republicans.

JOAN TOOLE received an MS degree in Finance from the University of Montana in 1976 and an MA degree in Public Administration from Harvard University in 1985. Her ranching, finance, and legislative experience has given her a solid background in the areas of natural resource policy and public finance. Ms. Toole has also been active for a number of years in numerous community affairs.

JERRY L. WIEDEBUSH was raised on a South Dakota farm and now lives in Plentywood. Mr. Wiedebush has worked in banking for the past 20 years—the last seven as President of the Security State Bank in Plentywood. He is married and has two sons.

WYOMING: WIND RIVER INDIAN RESERVATION BEGINS DEVELOPING COURT AWARDED RIGHTS

The Shoshone and Arapaho tribes plan immediate development of the nearly 500,000 acre-feet of water rights received from the Wind River adjudication. A divided U.S. Supreme Court upheld this award last summer ("Divided Court, Divided Region," WS Vol. 3, No. 3).

According to Kate Vandemoer, executive director of the Wind River Environmental Quality Commission, "we need to put this water to use as soon as possible to alleviate crippling poverty and the high unemployment rate on the reservation." Beginning next summer, tribes plan to use as much as 50,000 acre-feet of the rights awarded by the court for future uses on a 7,000-8,000-acre agricultural development and return to production between 10,000 and 15,000 acres of idle land. Designation of water for instream flows is also being considered.

Efforts for long-term development are also underway. According to Richard Ortiz, tax director for the Shoshone and Arapaho tribes, the tribes' joint business council is considering the creation of a tribal farm and ranch corporation to develop lands and is studying a program to help individual Indians develop lands. Development of water rights is "a very integral part of economic development." To start and finance development, tribal officials have been in touch with outside corporations and Japanese investors.

A tribal water code has also been drafted. It calls for criteria to decide when a use of water, including groundwater, is appropriate for tribal goals. The code will be available for public comment early this year. It is based on the premise that court decisions have granted tribes jurisdiction over water rights. Ms. Vandemoer said, "we firmly believe that because we have jurisdiction, the only way to protect and manage water resources is a unified system" of management and administration. While the tribe expects that the premise will prove controversial, she hopes "the state will see we are designing a system that is fair for everyone, and for the resource." Wyoming State Engineer Jeff Fassett ➤

CONCERNED CITIZENS FORM BEAVERHEAD DROUGHT TASK FORCE

An experiment currently underway in the Beaverhead River Basin is targeting new ways to combat drought at the local level by having people work together *before* the worst effects of drought become reality. Recommended as part of Montana's state water planning process, this approach is outlined in the plan's drought management section—the primary work product of a drought management steering committee comprised of people involved in Montana's drought management efforts.

Last February, the steering committee informed Governor Stephens of the bleak water supply situation in the Beaverhead. Committee chairman Stan Bradshaw sent a letter to the governor suggesting a local, proactive approach to the drought problem. On February 16, Governor Stephens convened a meeting of the state Disaster Advisory Council to consider the committee's suggestion and receive information about statewide water supply conditions. The council offered staffing and organizational assistance from the state if local people expressed interest in forming a drought task force. Montana state representative Chuck Swysgood, the Beaverhead county commissioners, and the City Of Dillon were among those who responded favorably to forming the Beaverhead Drought Task Force.

The task force held its first meeting March 16 in Dillon; the group has met twice since then. At each meeting, DNRC presents a current report on Beaverhead and statewide water supply conditions. Other meeting topics have focused on how water would be allocated from Clark Canyon Reservoir, reductions in irrigation water allotments, preparations for fighting fires, responding to grazing allotment reductions on federal land, problems with Dillon's municipal water supply, fisheries management, and effects of pumping from large-scale irrigation wells upon surface water supplies and prior water rights.

The task force received extensive attention from local media and has provided information to the public about potential drought effects and methods for dealing with them; Dillon has already imposed voluntary water use restrictions.

ROCK CREEK BASIN CLOSURE

Rock Creek (Carbon County) headwaters in the Beartooth Plateau flow north to the Clark's Fork of the Yellowstone River. Consisting of several major streams and two major storage facilities—Glacier Lake and Cooney Reservoir—the basin has continued to experience water shortages, as evidenced by its various court decrees; the oldest decree dates from 1902. For more than 60 years, a water commissioner has been appointed annually for Rock Creek under its decree. Water commissioners for other major tributaries have been appointed under separate decrees.

To protect existing, decreed water rights from any future appropriations of water, the Rocky Fork Decreed Water Users filed a petition with DNRC to close the Rock Creek Basin. Signed by 73 water users, the petition claimed that no unappropriated water was available in the drainage during the irrigation season. Upon completing a water availability study, DNRC concluded that water use exceeds supply during those months of intense competition among various uses. Besides existing appropriations of water, the Department of Fish, Wildlife and Parks' instream flow water reservation further reduced the basin's water availability.

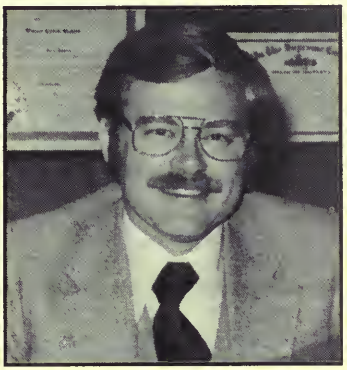
In response to the study and a public hearing held by DNRC, the department adopted administrative rules to close the Rock Creek Basin. These rules require that DNRC reject all applications for water use permits from any surface water source, the Rock Creek main stem, or any of its tributaries, for consumptive uses of water from June 1 through September 30. Nonconsumptive-use applications will continue to be accepted and processed. Any permit granted, however, will be conditioned to guarantee no streamflow reductions. Also, any applications that involve a storage facility to impound water only outside of the closure period will be processed. The department's administrative rules became effective February 9, 1990.

LOBLE NAMED CHIEF WATER JUDGE

C. Bruce Loble, 43, a Helena attorney, has assumed the position of Montana's chief water judge in Bozeman; he replaces Judge W.W. Lessley, who died March 29. Lessley was the sole head of the Water Court since its creation in 1979 to decide ownership of pre-1973 water rights throughout the state. Loble will serve the remainder of Lessley's term, which expires June 30, 1993.

Supreme Court Justice Jean Turnage appointed Loble to the judgeship on May 14 from among five finalists vying for the job. In making the appointment, Turnage emphasized Loble's lengthy experience with court cases that involved water rights and related issues. Turnage also said that Loble fared the best under the criteria used by the Judicial Nomination Commission.

Since 1973, Loble's private law practice has included trial, appellant, and administrative work before state courts and state agencies. Fully 50 to 60 percent of Loble's practice during the past 16 years has focused on water rights and related natural resource areas, including determination of existing water rights, pursuit of water right permits from DNRC, water right trials before the District and Water courts, and participation in water right appeals to the Montana Supreme Court. Through his practice, Loble represented a variety of clients throughout Montana, including ranchers, water user associations, and Fortune 500 companies that own ranches in Montana.



Bruce Loble

Loble's family is well known in the judicial field. His father, Henry, served as district judge in Helena for seven years until 1989, and his grandfather held that same office for 12 years during the late 1960s and early 70s.

Loble currently serves as the chairman of the board of trustees for the Downtown Helena Business Improvement District. He is also a past president and current member of the board of directors for the Sons and Daughters of Montana Pioneers. A member of the State Bar of Montana since 1972, Loble also chaired the Section on Land and Natural Resources from 1978 to 1982.

Raised and educated in Helena, Loble graduated from Helena Senior High School in 1965. He earned a B.A. degree in history and political science from the University of Montana in 1969 and received his law degree from the U of M in 1972. Loble and his wife, Sally, have two sons, Brian and Chandler.

DNRC offers its congratulations to Judge Loble and looks forward to working with him and the Water Court.

CALIFORNIA: MWD ADDS $100/AF REBATE TO WATER CONSERVATION PROGRAM

The board of the Metropolitan Water District of Southern California (MWD) has approved a $10 million rebate program to encourage retail water agencies to cut water use this summer. The program is part of a major effort by MWD and other southern California agencies to reduce water consumption by 10 percent in the face of California's continuing drought. According to MWD general manager Carl Boronkay, "By voluntarily reducing water use now, we can help avoid possible rationing next year by leaving conserved water in storage in reservoirs and groundwater basins. That water will be invaluable should the drought continue into 1991." Under the program, MWD will pay agencies $100 for each af of water conserved beyond a five-percent cutback. It hopes to reduce use by 100,000 af beyond the five-percent reduction expected from a $2 million conservation advertising program.

The rebate program and education programs are part of a broader conservation effort. MWD's board has also approved joint participation with the city of Los Angeles in a $2.2 million program to retrofit 100,000 homes with low-flow shower heads and other water-saving devices. It has allocated $500,000 for the purchase of water conservation kits that will be distributed to households by retail water agencies. It has also supported pending legislation (SB 1520) that would provide tax credits for the installation of ultra-low-volume toilets in residences.

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TEXAS DISTRICT PROVIDES DATA TO SUPPORT CLAIMS FOR WATER DEPLETION ALLOWANCE

Depletion allowances, which have been widely used by Texas oilmen for decades, may become as popular among irrigators. Under a depletion allowance, the owner of a depletable resource such as oil, gas, or groundwater receives a tax deduction for the value of reserves extracted during the tax year.

Landowners served by the High Plains Underground Water Conservation District (HPUWCD) now have the data to claim a water depletion allowance on their federal income tax returns. Under federal law, landowners who have not previously filed a claim must establish the amount of water in storage, the cost of the water when they acquired their land, and the amount of water used during the tax year. HPUWCD recently announced that it has collected the necessary data to support taxpayer calculations. The price paid for water is determined from actual land sales as the difference between the prices of irrigated land and land used in dry farming. For each county in its service area, the district has compiled a table listing IRS-approved, "cost-in-water" land values since 1948. The amount of water in storage since 1948 is estimated from maps illustrating the saturated thickness of the Ogallala Formation.

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BRIEFLY NOTED: AROUND THE STATES

Arizona: The Salt River Project will pump about seven times more groundwater to meet its contractual obligations this year than it did last year—about 370,000 af by summer's end. The utility pumped only 54,000 af in 1989. * * * Congressmen and citizens in Arizona are pressuring Interior to change the management practices at the Glen Canyon Dam, claiming that water surges released to meet peak power demands erode beaches and banks in the Grand Canyon.

Oregon: The Oregon Water Resources Review Commission is proposing to increase fines to $1,000 on those who use water without a state permit. The Commission is also proposing regulations allowing it to curtail groundwater use during shortages, even if uses are exempt from permit requirements. Predictably, rules defining wasteful practices that would subject the user to fines or even to the loss of water rights without benefit of a trial are creating the greatest controversy.

Washington: The Puget Sound Water Quality Authority will release its draft 1991 Puget Sound Plan for public comment in early June. The plan includes new programs related to spill prevention, protection of fish and wildlife, and pesticides.

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DID YOU KNOW?

When you measure water, the amount can be described as either volume or flow rate. Montana law uses an acre-foot (the amount of water needed to cover an acre of land to a depth of one foot, or 325,900 gallons) as the standard measure of volume. Montana law also uses a cubic foot per second (cfs) as the standard flow-rate measure. Water flowing at a rate of 1 cfs for a day would yield a volume of about 2 af. During a year, this flow would produce 724 af.

A less-frequently used flow-rate measure—the miner's inch—is a carryover from early mining days. Forty miner's inches equals 1 cfs. Flow rates for the Clark Fork River near Missoula average 6,710 cfs during July. East of the Divide, average July flows near the mouth of the Marias River average 1,300 cfs. By comparison, flows near the mouth of the much-larger Yellowstone River average 23,100 cfs during July.

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BATTLE CREEK DAM PROPOSED

Saskatchewan Water Corporation and DNRC are jointly studying a proposed reservoir on Battle Creek, a small, prairie tributary of the Milk River that flows south from Saskatchewan and Alberta into Montana north of Chinook. This dam would provide supplemental irrigation water to several Saskatchewan irrigation projects and to 4,300 acres in Montana.

A recently completed feasibility analysis proposes a preliminary dam and spillway design, evaluates potential environmental and archaeological problems, and evaluates the reservoir's costs and benefits. The reservoir would store approximately 3,800 acre-feet (af), 3,200 af of which would be active storage. The dam would be located several miles north of the international boundary in Saskatchewan.

Although many prehistoric sites and artifacts have been discovered in the reservoir's vicinity, none appear unique or unmitigable. Similarly, no significant or unmitigable environmental effects that could halt reservoir construction have been identified thus far. The project's costs and benefits, however, are major concerns that need to be fully addressed.

The reservoir's estimated cost is approximately $4 million (Canadian). Saskatchewan benefits analyzed under the best possible scenario produce a benefit-cost ratio of almost 0.61. Mark Albee, an economist in the Water Resources Division, plans to work closely with Saskatchewan economists to quantify Montana benefits by employing the same methodology used to evaluate Saskatchewan benefits.

LETTING THE RIVERS RUN

Implementing the State Water Plan's Instream Flow Section

Instream flow protection is one of Montana's most visible and important water issues. In 1988, a section on instream flow protection was adopted into the state water plan. Summarized below are explanations of the section's recommendations and actions taken thus far to implement these recommendations.

Recommendation 1. Promote More Timely Acquisition of Water Reservations for Instream Flows

Several options were considered for incorporating instream flow concerns into the water use permitting and change-of-use processes. The solution recommended for this issue was to improve the ability to use water reservations for protecting instream flows. The 1989 Legislature took the first step toward implementing this recommendation by passing Senate Bill 447.

This law, which amends Section 83-2-316, MCA, says that a water reservation's priority of appropriation dates from the filing—with DNRC—of a notice of intention to apply for a water reservation in a basin in which no other notice of intention is pending. The notice of intention to apply must specify the basin for which the applicant is seeking a reservation.

Once DNRC receives the notice of intention, it must identify all potential water reservation applicants in the basin and notify them of the opportunity to also submit a reservation application and receive the base priority date. To receive the base priority date, applicants must submit an accurate, complete water reservation application within one year after filing the notice of intent to apply. The Board of Natural Resources and Conservation may, if good cause is shown, extend the time needed to prepare the application.

As the state water plan recommends, the Board may subordinate a water reservation to a water use permit if (1) DNRC accepts the permit application before the date of the Board order that grants the reservation, and (2) the effect of subordinating the reservation to one or more permits does not interfere substantially with the reservation's purpose. The Board also establishes relative priority of all reservations with the same base priority date.

Recommendation 2. Evaluate the Relative Security of Instream Flow Reservations

To respond to concerns that the security of instream flow reservations might be threatened by legally reallocating them to other uses, the plan section recommended a study of the relative security of instream flow reservations in the Yellowstone River

(continued on page 2)

(Instream, continued)
Basin (the only basin for which reservations have been established to date).

Since the Board is currently reviewing Yellowstone River Basin water reservations, evaluating the relative security of instream flow reservations would be premature. When the Board is finished, DNRC will proceed with implementing the recommendation.

Recommendation 3. Allow the Department of Fish, Wildlife and Parks to Lease Water for Instream Flow Purposes

To help increase flows in dewatered streams, the plan section recommends that DFWP be allowed to lease water from offstream or consumptive users. Once again, the 1989 Legislature took the first step toward implementing this recommendation by passing House Bill 707, a water leasing study.

This study provides an opportunity for DFWP to lease water on up to five stream reaches for four years. DNRC is then required to study the water leasing impacts on other water users. Water leases are now being pursued on two stream reaches.

Recommendation 4. Support Public Entities in Purchasing and Leasing Water Stored in Reservoirs

The plan section supports public entities in purchasing or leasing water stored in reservoirs above dewatered streams—and in revising the operating procedures of such reservoirs—as ways to increase flows in dewatered streams. DFWP continues to work with both public and private reservoir operators to improve instream flow conditions below such reservoirs.

Recommendation 5. Assess the Feasibility of New Storage Projects to Enhance Instream Resources

As another strategy for increasing flows in dewatered streams, the plan section recommends assessing the feasibility of new water storage projects to enhance instream resources. The state water plan's recently completed water storage section addresses the feasibility of both new and existing water storage facilities to help maintain and increase instream flows. In addition, DNRC—with DFWP—is (1) exploring opportunities to manage reservoir releases at Tongue River Dam for instream flow purposes, consistent with other anticipated uses and demands; and (2) expecting to improve the arctic grayling spawning habitat as part of the Middle Creek Dam rehabilitation project.

Recommendation 6. Support Cooperative Solutions at the Local Level

As a final recommendation for increasing instream flow in dewatered

GETTING THEIR FEET "WET"

Dennis Nelson and Sue Higgins Launch New Program

Imagine standing thigh-deep in one of Montana's many rivers, fly rod in hand. As you shade your eyes from the late-afternoon sun, you notice about 20 head of cattle nosing the water upstream; downstream you can barely see the outskirts of the small town where you'll deflate your raft. The fish ignore you for the moment, so you become philosophical and ponder the course of the water that surrounds you: Where did it come from? Who used it before it arrived here? Who will use it downstream? How is it conserved? How is it developed? How much water do I use in one day? What use consumes the most water each year? How is water measured? During the 1800s, how was this water captured and stored during the winter? When were the great dams built?

Photo by Scott Gill

Montana Watercourse Director Dennis Nelson and colleague Sue Higgins.

When did our water rights system begin? What's the difference between a water reservation, permitted right, adjudicated use right, and reserved water right? Above all, why is the way in which we manage water key to the integrity of our water resources? The answers to these and other questions will be addressed during the upcoming months by a new water education program.

During November 1989, a statewide water education program known

(continued on page 4)

streams, the plan section supports and encourages cooperative solutions at the local level. Two recent examples illustrate the potential of cooperative solutions.

First, the 1989 Legislature passed House Bill 463 to encourage mediation of local water right disputes. This legislation provides a formal process for potentially resolving local conflicts over instream and offstream water uses. Second, as provided by the state water plan's drought section, DNRC encouraged the resolution of a potential instream-offstream Beaverhead River conflict during the 1990 drought. Once again, DNRC simply provided a forum for all affected parties to sit down and resolve their drought-related problems at the local level.

Recommendation 7. Evaluate the Effect of Return Flows on Instream Resources

To help improve instream resource management in Montana, the plan also includes several recommendations for research. The first of these suggests a study on the effect of return flows on instream resource maintenance and enhancement. No action has been taken on this recommendation to date.

Recommendation 8. Evaluate Instream Flow Quantification Methods

Another research recommendation that focuses on evaluating instream flow quantification methods is being implemented by Dr. Robert White, a fisheries biology professor at Montana State University. Under a grant from the Montana Water Resources Research Center, Dr. White is currently evaluating the wetted-perimeter method for quantifying instream flows for fish—one of the methods used by DFWP.

Recommendation 9. Evaluate the Physical Availability of Water to Meet Instream Flow Demands

A final research recommendation involves evaluation of the physical availability of water to meet instream flow demands. Computer hydrology modeling associated with ongoing water reservation proceedings in the Missouri and Clark Fork river basins is being used to implement this recommendation.

REGIONAL NEWS

BuRec CONTRACTORS EXCHANGE BOISE RIVER WATER THROUGH WATER BANK

Acquirers:	BuRec contractors
Suppliers:	BuRec contractors
Water:	About 12,000 af of Boise River water stored in BuRec reservoirs
Purpose:	Irrigation
Terms:	$5.50/af
Status:	Offers of water for sale still being received

About 12,000 af of Boise River water stored in the BuRec's Arrowrock, Lucky Peak, and Anderson Ranch reservoirs will be exchanged this season through the Boise Water Bank. Buyers pay $5.50/af, from which the water master charges an administrative fee of 32 cents/af, netting sellers $5.18 for each af they offer through the bank. Although only 10,300 af have been offered for sale by participants as of mid-July, the water master expects that additional offers will soon bridge the gap.

The bank was set up in 1988 to allow BuRec contractors with excess water to sell to those who need extra water. All water traded through the bank is used for irrigation. The bank initially offers water for sale only to federal irrigation entities. Water left after purchases by those contractors can be sold to individuals. In 1988, 26,200 af were traded. In 1989, a year of higher-than-normal runoff, only 162 af were traded.

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Now that you've received several issues of *Water Lines*, we would appreciate your help with future issues. Please answer the following questions and return this form to *Water Lines*, DNRC Water Resources Division, Attn: Rose Bond, 1520 E. Sixth Ave., Helena, MT 59620-2301, or call (406)444-6603.

1. Would you like to continue receiving *Water Lines*?
   _____ Yes _____ No

2. What topics would you like to see addressed in future articles?

   (1) _____

   (2) _____

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3. Would you be interested in contributing an article for publication?
   _____ Yes _____ No

4. What sections could we add or omit to make the newsletter better?

   _____

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5. Any other comments or suggestions?

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6. If your name and address are incorrect on the mailing label, please make the necessary corrections on the other side of this form.

7. If you know of anyone who would like to be included on our mailing list, please write the name and address below:

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(Watercourse, continued)
as Montana Watercourse opened its office in Bozeman on the Montana State University campus. The program focuses on two major projects: (1) the Adult Water Awareness program to provide Montanans with background information on the numerous issues that need to be understood for more effective water management and decision making, and (2) the Water Education for Teachers (WET) program to supply teachers and natural resource educators with innovative, water resource-related lesson plans and teaching aids to educate Montana's youth.

These programs hope to open new avenues for Montana's citizens, youth, and teachers to learn about the state's water resources and contemporary issues in non-confrontational settings.

Dennis Nelson, who heads Montana Watercourse along with a western states water education program known as Western Watercourse, has been involved in water resource management and education for more than 10 years. Before relocating to Montana from North Dakota, he worked with the East Dakota Water Development District, the North Dakota Water Users Association, and the North Dakota Water Commission, where he developed North Dakota's WET program. Nelson has also served as an adjunct professor at North Dakota State University and the University of North Dakota, where he taught graduate-level water resource education courses.

Sue Higgins, who shares the MSU office as Nelson's half-time colleague, directs the Adult Water Awareness program for Montana Watercourse. Having spent five years as a water planner in Helena for the State of Montana and three years as a project associate of the Northern Lights Institute's Missouri River Management Project, Higgins looks forward to the challenge of setting up water resource information programs for Montanans.

Although the program is less than a year old, much has already been accomplished. Responses to a February survey sent to water managers, legislators, and state water users suggested that the adult program provide public information on water rights, water management principles, water conservation, and multi-use water management.

Using a water education plan prepared shortly thereafter as its basis, the Adult Water Awareness program will concentrate its first-year efforts on conducting a series of two-hour, evening water rights workshops. Two already held in Billings and Bozeman have met with great success, which Higgins attributes to the instruction provided by invited professionals such as water rights attorneys, DNRC field office supervisors, and Montana Water Court water masters. Monthly workshops will continue to be conducted throughout the state.

Development of materials for Project WET is proceeding rapidly. Students will use these materials to learn about Montana's surface water, groundwater, and contemporary water issues. Teaching aids include water resource management simulators and groundwater flow models, as well as the Project WET "Activity and Reference Guide" for grades K-12, "Liquid Treasure: Montana's Water Resources History Trunk," and "Water is our Best Friend," a K-3 teachers' guide. When Nelson developed North Dakota's Project WET program, more than 3,000 teachers attended Project WET workshops to receive these learning materials. Nelson and Higgins anticipate a similar or better response in Montana.

During the 1990s and beyond, meeting the challenge of balancing the use of Montana's water resources among its many critical uses—irrigation, recreation, fishery habitat, municipal/industrial supply, power development, and stock water—will become increasingly more difficult. Therefore, it is imperative that water education for adults, teachers, and youth play a major role in Montana's water management future and provide the critical link to more informed public participation in the management of our rivers, lakes, and groundwater resources.

For more information about how you can participate, please write to Montana Watercourse at 122 Gaines Hall, Montana State University, Bozeman, MT 59717, or call (406)994-5392. Dennis Nelson or Sue Higgins will be glad to send you information or answer your questions.

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WATER LINES
NEWS FROM THE WATER RESOURCES DIVISION
DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION • JANUARY 1991

DEPARTMENT NEWS

HOUSE AND SENATE TO CONSIDER WATER LEGISLATION

The 52nd session of the Montana Legislature began Monday, Jan. 7, in Helena. Among legislation to be considered by the session's senators and representatives are a number of water resource-related bills drafted at the request of the Department of Natural Resources and Conservation (DNRC).

At this writing, the bills outlined below (with the exception of one) were yet to be formally introduced in the legislature. Therefore, they are listed by their Legislative Council (LC) numbers.

• **LC 550 Drought Advisory Committee Creation.** To create a drought advisory committee and define its responsibilities.

• **LC 905 Water Rights Transfer.** To clarify that a water right may be temporarily changed and transferred to another person; amending section 85-2-404, MCA.

• **LC 906 Beneficial Use of Salvaged Water.** To clarify the right to beneficially use, sell, or lease salvaged water; define "salvage"; provide criteria for approval of changes in appropriation rights involving salvaged water; establish priority of appropriation for salvaged water; establish period after which the right to salvaged water is forfeited; amending sections 85-2-102, 401, and 402, MCA.

• **LC 908 Water Storage Policy Act.** To clarify state water storage policy and the role of storage in solving water problems; establish guidelines for setting priorities among new storage and rehabilitation storage projects; require a study of the feasibility of assessing recreational user fees to repay water storage project costs; require a study by the Water Policy Committee of water storage laws and regulations; create a water storage special revenue account; allocate additional coal severance and resource indemnity trust tax revenues for water development; allocate 25 percent of the money available as grants in the Water Development state special revenue account and Renewable Resource Development account to development of water storage projects; eliminate ten-year limit on project development plans required in applications for large water use permits; amending sections 15-35-108, 15-38-202, 85-1-603 and 604, 85-2-310, and 90-2-111, MCA.

• **LC 909 Water Reservation Amendments.** To allow available water from a revoked or modified reservation to be appropriated; require Board of Natural Resources and Conservation (BNRC) approval of change in appropriation rights; allow and establish criteria for transfers of water reservations; amending section 85-2-316, MCA.

• **LC 910 Dam Safety Act Revisions.** To clarify the definitions of "dam" and "reservoir"; exempt non-federal dams and reservoirs on federal lands that are subject to dam safety review by a federal agency from state dam safety review; amending sections 85-15-106 and 107, MCA.

• **LC 911 Tongue River Dam Rehab Cost-Share.** To authorize issuance of State of Montana coal severance tax bonds for a state-federal cost share of Tongue River Dam rehabilitation construction costs.

• **LC 912 State-owned Water Project Disposition.** To clarify the law providing for disposition of state-owned water projects by DNRC; establish a date for DNRC to attempt to dispose of its canal projects; increase percentage of affected water users that may veto a DNRC decision to dispose of a project; amending sections 85-1-211 and 85-6-109, MCA.

• **HB 171 Daly Ditch Water Project Repeal. Primary Sponsor: Steve Benedict.** To repeal sections 85-1-401, 402, 403, 404, 405, 406, 407, 408, 409, MCA, which provide for abandonment of the Daly Ditch water project.

• **LC 914 Clarifying use of Money Collected by the BWWC.** To clarify that all money collected under Title 37, Chapter 43, must be reserved for use by the Board of Water Well Contractors (BWWC); clarify that the BWWC may expend funds from forfeited bonds; amending section 17-7-502, MCA.

• **LC 915 Water Leasing Study Amendments.** To establish enforcement provisions for violations of the Montana Water Use Act; amending sections 85-2-114 and 122, MCA.

• **LC 916 Montana Water Use Act Revisions.** To revise the Montana Water Use Act; define the term "groundwater"; clarify permit exceptions; make submission of DNRC's water right records to county clerks and recorders permissive; require verification of completions of permits and change approvals; include water quality criteria in issuance of permit or change authorization; amending sections 85-2-102, 113, 236, 308, 311, 312, 315, 402, 424, and 501, MCA; repealing section 85-2-317, MCA.

• **LC 917 Hydroelectric Revenues to Water Conservation Projects.** To allocate hydroelectric power generation revenues generated at state water conservation projects to repair and rehabilitate state water conservation projects; authorize DNRC to transfer funds from the state water project hydroelectric power generation special revenue account and the Broadwater replacement and renewal account for payment of debt service on water project bonds; amending sections 17-7-502 and 85-1-510, MCA.

If you are interested in learning more about a particular bill, please call Laurence Siroky, Water Resources Division Assistant Administrator, at 444-6610 for details on specific bills, e.g., formal house or senate numbers, sponsor(s), and current status.

PLEASE RETURN

MIDDLE CREEK UPDATE

During fiscal year 1990, President George Bush signed legislation that authorizes funding for DNRC's Middle Creek Dam project south of Bozeman.

Total project repair costs estimated at $5.2 million will be paid by a federal loan and grant from the U.S. Bureau of Reclamation and the state's contribution of $1.3 million. The Middle Creek Water Users Association and the City of Bozeman will repay the loan over a period of 40 years.

Middle Creek Dam, also known as Hyalite Reservoir, supplies irrigation water to the Gallatin Valley and Montana State University, and municipal water to the City of Bozeman. The reservoir also provides year-round recreational opportunities for Montanans and non-residents alike.

Repairs will bring the project up to current dam-safety standards and provide additional water storage. Final design of the project has been completed, and construction bids were opened in December 1990. Low bidder was Ames Construction, Inc. of Barnesville, Minnesota, with a bid of $2,625,237.80.

Construction work will involve raising the dam embankment 10 feet by using reinforced earth and conventional earthfill and raising the reservoir water surface 8.2 feet, constructing an unlined auxiliary spillway with a channel and dikes, removing the existing spillway and bridge, and installing two new concrete baffled apron drops, new bridges, and a channel and dike between the drops. The contractor will also blanket the upstream left abutment, reslope and riprap the streambank below the outlet works, place a day-use area in the auxiliary spillway, build a new campground at the upper end of the reservoir, and modify the Wood Creek campground. Construction is expected to begin in spring 1991 and be completed during fall 1992; the reservoir will be filled in 1993.

A massive cooperative effort among DNRC and the U.S. Forest Service, U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service, Middle Creek Water Users Association, City of Bozeman, and the Montana Department of Fish, Wildlife and Parks served as the driving force needed to move the project ahead.

MONTANA'S DAM-SAFETY PROGRAM

Mike Oelrich and Mark Peterson strive for reasonable dam safety standards

A rivulet of water cascading down an earthen slope may not appear threatening. If its source, however, is a piping failure through a dam, the dam could fail suddenly and result in a wall of water racing downstream, devouring everything in its path. Another result, of course, could be nothing more than a bit of seepage escaping from the reservoir that may never find the dam. Therefore, a test of reasonableness must be made before requiring repair or engineering analysis of any dam.

DNRC's Mike Oelrich and Mark Peterson are the individuals responsible for making these difficult decisions in a sensible manner. Mike and Mark, civil engineers who serve as the core of DNRC's dam-safety section, do their best to balance public safety with the high value an owner places on the precious resource contained within his reservoir.

L-R: Mike Oelrich, Data Entry Operator Shawn Kornec, Mark Peterson

The dam-safety section regulates dams in Montana that would likely harm people if the dams were to fail. Passed in 1985, the Montana Dam Safety Act applies to dams that can impound 50 acre-feet (af) or more of water. The act requires that dam owners making repairs and others proposing to construct new dams have their dams classified to determine if failure of the dam would likely result in loss of life downstream. This classification does <u>not</u> determine how likely the dam is to fail. Condition of the dam is only a factor in <u>how</u> the dam is regulated, not <u>if</u> it is regulated. Owners of dams regulated by the dam-safety section must obtain permits for dam construction, repair, and operation.

The dam-safety section is now finishing a review of at least 3,500 Montana dams that impound 50 af or more of water. The staff is contacting owners of dams that appear to be affected by the dam-safety law because of downstream development. Through a series of public education workshops, the dam safety section is encouraging these dam owners to apply for a hazard classification.

Workshops have been held in Glasgow, Miles City, Billings, Lewistown, Great Falls, Missoula, and Hamilton. Workshops are scheduled for January 30 in Shelby and January 31 in Havre. Other workshops will be held this spring in Bozeman, Ana-

MONTANA WATERCOURSE UPDATE

Cooperation: The Key to Success

The old saying that "all of us are smarter than one of us" holds great meaning and truth. During the past year, Montana Watercourse staff has taken this saying seriously in developing its adult water awareness program and Project WET Montana. An open-door approach has resulted in the formation of many multi-organization projects, proving that the spirit of cooperation is alive and well in Montana!

The following projects are being developed through cooperative arrangements:

Water Rights Workshops. Montana Watercourse staff, in cooperation with DNRC, the Montana water courts, and DNRC water resource field offices, has conducted five water rights workshops. Attendance ranged from 45 people at Kalispell to more than 100 at Missoula. A workshop was held in Helena January 22 and, beginning in February, Montana Watercourse will conduct two water rights workshops each month. Among groups expressing interest in co-sponsoring a workshop are Headwaters RC&D, Trout Unlimited, and several conservation districts.

Water Facts Display. From January 21-24, Montana Watercourse--with DNRC assistance--presented a display in the Capitol rotunda titled "What Montanans Want to Know about Water." The display addressed 10 commonly asked questions about Montana water management. If you would like a copy of the questions and answers, please contact the Montana Watercourse office. You can also request use of the display for special meetings.

Montana 4-H/Extension Service School Enrichment Program. The Montana 4-H/Extension Service has selected Project WET Montana for its newly established School Enrichment Program. Montana County Extension Services offices will be promoting and delivering Project WET Montana learning aids to educators and students. The introduction of WET through the county extension offices will include a well-accepted and proven delivery system and statewide coverage.

Energy and Water Calendar Project. The Montana Energy Education Council (MEEC) and Project WET Montana will co-sponsor development of MEEC's 1992 calendar. This calendar will feature winning entries from the Montana Energy and Water Poster Contest for fourth-, fifth-, and sixth-graders. Students throughout Montana will be asked to submit drawings depicting different uses of water, the importance of water to Montanans, or historical uses of water. The calendars will be distributed to Montana's schools and sponsoring organizations.

Project WET Workshops. Teachers throughout Montana will have the opportunity to learn more about Montana's water resources by attending Project WET workshops. Project WET Montana and the Department of Fish, Wildlife and Parks, through its Project WILD Aquatic program, will co-sponsor water education workshops for teachers.

These 10-hour workshops provide educators with graduate level credit and focus on providing teachers with basic information about water. Most importantly, educators will learn practical, hands-on ideas that will help children better understand Montana's water resources. Teachers attending the WET workshops will receive a Project WET Montana activity guide, a copy of "Water is Montana's Best Friend," a Project WILD Aquatic activity guide, numerous reference booklets, training in the use of the Water Resources Management Simulator, the Ground Water Flow Model Education Trunk, the Liquid Treasure: Montana's Water Resources Water History Project, and exposure to numerous other teaching aids. Every effort will be made to tailor part of the workshop toward local water issues.

In addition to the excellent support Project WET Montana has received from local organizations interested in sponsoring workshops, it is working with the Musselshell-Golden Valley Counties MSU-Extension Service on a Roundup workshop, the Helena Flats School on a Kalispell workshop, and the Judith Basin Conservation District on a Stanford workshop.

Cooperation on Clark Fork Education Project. The "Clark Fork Watershed Education Project" is a water education program for teachers sponsored through the Missoula Conservation District with assistance from DNRC's Conservation Districts Division. DNRC staffer Joan Schumaker has been developing workshops for teachers in the Clark Fork basin with an emphasis on the historical, physical, and biological nature of water in the upper Clark Fork. A two-day workshop was held in Butte last October, with follow-up sessions planned for February and April 1991. Joan has invited Montana Watercourse staff to share information on water rights and Project WET Montana at the project's next workshop. (Some of the Montana Watercourse materials that will be presented at the workshop are described on the next page.)

People interested in learning more about any of the above projects or working on water education projects with Montana Watercourse staff are encouraged to contact either Susan Higgins or Dennis Nelson at the following address: Montana Watercourse, 122 Gaines Hall, Montana State University, Bozeman, MT 59717, or call 994-5392.

Montana Water History Suitcase Exhibit Project Underway

What was it like to live in Montana during the "Dust Bowl Years" of the 1930s? To live in a one-room sod house with no running water or indoor plumbing? To carry water in a buffalo bladder or tightly woven basket as some Indian tribes did? To explore the uncharted Missouri River as Lewis and Clark did in 1804 and 1805? To listen to Dwight D. Eisenhower's dedication speech at the Fort Peck Dam closure ceremony? To rendezvous with fur traders and trappers along a pristine mountain stream in the early 1880s? To witch for groundwater with a forked willow stick? Many of these questions are given no more than a passing thought today. These events and circumstances and many others, however, helped shape Montana and its people.

Montana Watercourse will use the Liquid Treasure project to unlock a treasure chest full of information on Montana's water resources. Most importantly, this project will help people look back at significant water events, with the expectation that the knowledge gained will provide users with a better understanding of Montana's water management issues.

The Liquid Treasure exhibit has four major components: (1) artifacts (ice tongs, canvas water bag, willow witching stick, and a hand-held clothes agitator); (2) photographs of water history topics (flooding and drought scenes, mills, ice harvesting, early fire machines, irrigation, and fishing); (3) historical documents and film footage (construction of the Fort Peck Dam, excerpts from major environmental legislation, and footage of water-related natural disasters); and (4) a teacher's guide complete with lesson plans and suggestions on ways to use the items in the suitcase.

Montana Watercourse will use the Liquid Treasure project for its youth and adult education programs. The project is appropriate for use by schools, libraries, 4-H clubs, resource agencies, or anyone interested in learning more about Montana's water history. The suitcase will be shipped UPS to users on a two-week reservation system. Although staffers have already been using the Liquid Treasure project at WET workshops, July 1991 has been designated as the completion date.

Development of the Liquid Treasure project was made possible by financial support from the Montana Water Resources Research Center, the U.S. Bureau of Reclamation, and Patagonia.

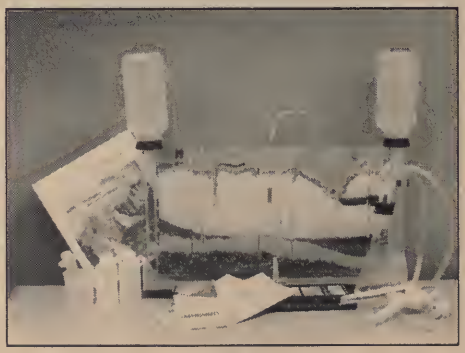
Anyone interested in more information is encouraged to contact Montana Watercourse at 994-5392.

Groundwater Flow Model Education Trunk Available

Montana Watercourse has assembled five Groundwater Flow Model Education Trunks for circulation to Montana's schools and resource agencies; groundwater flow models are used to demonstrate groundwater movement principles. A model constructed with a clear plexiglass front allows observers to watch how water introduced to the system moves and how the water is affected by such obstacles as a pumping well or river.

The model can demonstrate a surprising number of physical and chemical groundwater concepts. Several of these include the following:

- Groundwater systems vary in size, ability to produce water, depth, rock material, water quality, and other characteristics.
- Groundwater is related to atmospheric and surface water through the hydrologic (water) cycle.
- Human activities at or near the land's surface can contaminate groundwater.



The model comes as a complete groundwater education package; the instructor needs only to add water. The model is easy to use and comes with a user's guide, reference materials, several groundwater video tapes, and supplemental lesson plans for classroom use. A small fee will be charged to cover shipping costs.

If you are interested in reserving a model, please contact the Montana Watercourse office at 994-5392 for procedures.

conda, Kalispell, and possibly Helena.

Mark Peterson has an MS degree in Hydrology and Hydraulics from Montana State University and has worked for both the private and public sectors. Prior to DNRC, he worked at the Department of Highways. During the brief time Mark has been with DNRC, he has completed a dozen hazard classifications and participated in several workshops. Mike Oelrich has an MS degree in Geotechnical Engineering from Colorado State University and has worked for the dam-safety section since June 1988. Before moving to Montana, he conducted engineering research for the U.S. Air Force. Mike was recently appointed dam-safety section supervisor.

Since Mike and Mark are unable to handle all of the dam-safety workload by themselves, the water resources field offices lend a great deal of support by helping to update the inventory, gather field survey data, and inspect dams. Dam-safety work in the field offices is handled primarily by field engineers such as Marvin Cross in Havre, Sterling Sundheim in Lewistown, Larry Schock in Missoula, Jim Beck in Helena, and Rod Brunner in Billings.

A wealth of information and help is available to Montanans from the field offices or from Helena's main office. For example, a brochure titled "Do You Own a High-Hazard Dam?" summarizes the dam-safety law and rules and serves as an excellent starting point for people interested in more information. Available to owners of regulated dams is a resource notebook packed with examples of operating plans and other owner information. Dam owners and engineers may be interested in a library of free textbooks and instructional videos on dam inspection and analysis. For a complete list of available publications, or to obtain permit and classification forms, contact any of the field offices or call Mike Oelrich, 444-6613, or Mark Peterson, 444-6664, in Helena.

GOVERNOR APPOINTS NEW BNRC MEMBERS

Governor Stan Stephens has appointed four Montanans to serve on the Board of Natural Resources and Conservation: Fred Booth of Highwood, George Roskie of Great Falls, Jack Galt of Martinsdale, and John Bailey of Livingston. They join members Janice Rehberg of Billings--who will chair the board--Terry Anderson of Bozeman, and Ed McHatton of Lolo. The seven-member panel is charged with providing public oversight and permit approval for DNRC programs.

Outgoing BNRC members include Dr. William Shields, Lorents Grosfield, Joan Toole, and Jerry Wiedebush.

The new board's first meeting is scheduled for February 7-8 in Helena.

REGIONAL NEWS

DROUGHT-REDUCED MISSOURI RIVER IS STILL NOT UP TO NORMAL CURRENT

Corps of Engineers trims dam releases

The lingering drought in the upper Missouri River Basin means continued limited water releases well into the foreseeable future from the system's three large upper-basin reservoirs. Limited releases have been predicted by U.S. Army Corps of Engineers officials.

According to Duane Sveum, chief of the Corps' Reservoir Service Center, the operating plan for the coming year probably pleases no one, neither upstream users, who depend on water in the system's three major dams (Oahe, in South Dakota, Garrison, in North Dakota, and Ft. Peck, in Montana) nor downstream users, who depend on higher river levels for municipal water intake, summer barge traffic, and cooling of power generating plants. But, said Sveum, "despite heavier spring rainfall, reservoir levels and runoff rates remain at near record lows, and a balance has to be struck between the various interests because there isn't enough water to meet normal needs for everyone."

Sveum said project releases to be made from Gavins Point Reservoir, the lowermost in the system and the impoundment that directly affects lower river level, will be as low as 56 percent of normal in February. The projected releases will be 10,000 cubic feet per second (cfs) compared to the 20-year average of 18,300 cfs. Averages for the mainstem reservoirs, he said, will shrink proportionally. As of early last month, releases from Gavins Point were at a near record low of 9,000 cfs. But Sveum said releases have been made at that low level because the lower Missouri is late in freezing. When the river begins freezing, releases will be increased to replace water lost to the river by freezing that will protect downstream water intakes.

The announcement of the 1991 release forecasts brought immediate response from both upstream users, who found the figures too high, and downstream users, who found them too low. Dick Berenson, an official of the South Dakota Game and Parks Department and the representative of Gov. George Mickelson, criticized the figure, saying the upstream states have had to bear the brunt of the four-year drought because reduced levels in the mainstem reservoirs have caused losses to irrigation, hydropower, and fish hatcheries.

But Jim Brown, a spokesman for Iowa Gov. Terry Branstead, responded by saying "there is plenty of pain" downstream in the form of re-

duced barge traffic, marinas that have become inaccessible to the river, and water levels so low they threaten water intakes at both power plants and water utilities.

According to Sveum, the barge season for 1991 will be shortened to match last year's limited season of April 8 to November 1. The April date is one week later than normal, and the November end to the season is one month earlier. The shortened season will impact both barge operators and farmers, who will be forced to pay higher fees for fertilizer shipments in the spring and crop shipments in the fall. The other threats to downstream commerce are in Kansas City, where it is feared the formation of ice bridges could threaten the operation of water and power plants. In Sioux City, Iowa, it is feared lower river levels may limit the groundwater production from a new well field.

Sveum said because of the effects of the drought on all parties, the Corps has begun an Environmental Impact Study and review of the present water control master plan. But he said the plan will not be completed until September 1992.

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INSTREAM FLOW BILL WOULD OVERTURN SUPREME COURT DECISION

Recently introduced legislation to restore states' authority to maintain instream flow of rivers for the protection of fish, wildlife, and recreation would overturn a recent U.S. Supreme Court decision, according to American Rivers, a national conservation group.

Offered by Sen. James Jeffords, R-VT, the bill would reverse the decision that the Federal Power Act preempts state regulation of water flows at Federal Energy Regulatory Commission-licensed hydroelectric projects. If approved, the bill would affect hundreds of hydropower licensing and relicensing cases nationwide. The bill would expand Section 401 of the Clean Water Act, requiring an applicant for a federal hydroelectric license to obtain state certification that the project will not violate the state's water quality standards. Four such legal controversies in Maine, New York, Pennsylvania, and Vermont led to the Supreme Court decision. American Rivers, a river conservation group and chief promoter of the legislation, said it was introduced late in the session partially to answer the court decision and partially to get a head start on the next congressional session.

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WATER LINES

NEWS FROM THE WATER RESOURCES DIVISION
DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION • APRIL 1991

PLEASE RETURN

DEPARTMENT NEWS

MONTANA LEGISLATURE ACTS ON WATER RESOURCE BILLS

January's issue of *Water Lines* listed a number of legislative bills that were drafted at this department's request. Now, as the 52nd session of the Montana Legislature draws to a close, we are bringing you up to date on those and other important water resource bills. At this printing, legislators have taken the following action: (Note: Because of space considerations, exact bill language has been summarized.)

HOUSE BILL 171
Repeals statutes that provide for abandonment of Daly Ditch water project.
2/27/91: SIGNED BY GOVERNOR
2/27/91: EFFECTIVE DATE

HOUSE BILL 189
Allows the use of water mediators in decreed and non-decreed basins.
3/20/91: SIGNED BY GOVERNOR
10/1/91: EFFECTIVE DATE

HOUSE BILL 360
Provides terms for members of the Reserved Water Rights Compact Commission; extends termination date for suspension of adjudication requirements.
4/25/91: RETURNED FROM ENROLLING

HOUSE BILL 361
Clarifies adjudication process for federal reserved water rights with priority date of July 1, 1973, or later.
4/4/91: SIGNED BY GOVERNOR
4/4/91: EFFECTIVE DATE

HOUSE BILL 382
Generally revises Dam Safety Act; clarifies definitions of *dam* and *reservoir*; exempts non-federal dams and reservoirs on federal lands that are subject to dam safety review by a federal agency from state dam safety review.
4/6/91: SIGNED BY GOVERNOR
4/6/91: EFFECTIVE DATE

HOUSE BILL 418
Clarifies that all money collected under Title 37, Chapter 43, MCA, must be reserved for use by Board of Water Well Contractors; clarifies that BWWC may expend funds from bonds; provides statutory appropriation.
4/20/91: SIGNED BY GOVERNOR
4/20/91: EFFECTIVE DATE

HOUSE BILL 537
Creates a drought advisory committee; defines committee's responsibilities.
3/27/91: SIGNED BY GOVERNOR
3/27/91: EFFECTIVE DATE

HOUSE BILL 586
Allocates hydroelectric power generation revenues derived from state water conservation projects to repair and rehabilitate state water conservation projects; authorizes DNRC to transfer funds from the state water project hydroelectric power generation special revenue account and the Broadwater replacement and renewal account for payment of debt service on water project bonds.
4/6/91: SIGNED BY GOVERNOR
7/1/91: EFFECTIVE DATE

HOUSE BILL 745
Establishes a partial basin closure in Beaverhead and Red Rock River basins.
4/4/91: SIGNED BY GOVERNOR

HOUSE BILL 814
Clarifies law providing for disposition of state-owned water projects by DNRC; establishes date for department to attempt to dispose of its canal projects; increases percentage of affected water users required to veto a department decision to dispose of a project.
4/15/91: SIGNED BY GOVERNOR
4/15/91: EFFECTIVE DATE

HOUSE BILL 880
Redefines *dam, high-hazard dam,* and *reservoir*; clarifies liability for dams and reservoirs; removes authority of district courts and county commissioners to appoint water impoundment safety panels.
2/22/91: BILL KILLED

HOUSE BILL 908
Requires Board of Natural Resources and Conservation (BNRC) to adopt rules requiring acquisition, installation, and maintenance of water measuring devices on chronically dewatered watercourses or portions of watercourses; provides guidelines for DNRC to identify chronically dewatered watercourses; authorizes DNRC to consider water development program grant and loan applications for installation of required measuring devices.
4/22/91: SIGNED BY GOVERNOR
10/1/91: EFFECTIVE DATE

HOUSE BILL 956
Generally revises strip-mining and underground-mining reclamation laws to provide for protection of water resources and for the restoration or replacement of water resources and restoration and continuation of beneficial uses of water that are diminished or degraded by permitted mining operations; establishes a water restoration and replacement financial assurance requirement; establishes administrative procedures; revises mandamus procedures.
4/3/91: BILL KILLED

HOUSE JOINT RESOLUTION 42
Expresses legislature's opposition to use of Montana water for transportation of coal until Montana's water rights adjudication process is complete.
4/23/91: RETURNED FROM ENROLLING

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SENATE BILL 94
Creates groundwater monitoring and characterization programs; establishes groundwater assessment account; increases filing fee for notice of completion of groundwater development; increases filing fee for permits to beneficially use groundwater; directs Board of Water Well Contractors to amend rule 36.21.415, ARM, to increase license fees; establishes groundwater assessment steering committee; directs Montana Bureau of Mines and Geology to administer the programs.
4/25/91: THIRD READING. FREE CONFERENCE COMMITTEE REPORT ADOPTED

SENATE BILL 136
Provides for establishment of local water quality districts and authorizes the following: establishment of fees; governing bodies of counties, cities, and towns that participate in a local water quality district to adopt local laws related to water quality protection; the Board of Health and Environmental Sciences to approve local water quality programs; and the Department of Health and Environmental Sciences to monitor implementation of local water quality programs.
4/6/91: SIGNED BY GOVERNOR
10/1/91: EFFECTIVE DATE

SENATE BILL 265
Clarifies right to beneficially use, sell, or lease salvaged water; defines salvage; provides criteria for approval of changes in appropriation rights involving salvaged water.
4/1/91: SIGNED BY GOVERNOR
10/1/91: EFFECTIVE DATE

SENATE BILL 266
Revises Montana water use laws; defines the term *groundwater*; clarifies objections; makes permissive and authorizing fees for submission of department records of water rights to a county clerk and recorder; requires verification of completions of permits and change approvals.
4/25/91: THIRD READING. FREE CONFERENCE COMMITTEE REPORT ADOPTED

SENATE BILL 303
Authorizes DNRC to consider effects on water quality and aquifer recharge rates when issuing permits to beneficially use water and when approving changes in appropriation rights; provides that units of local government may request designation of controlled groundwater area.
4/6/91: BILL KILLED

SENATE BILL 313
Clarifies state water storage policy and role of storage in solving water problems; establishes guidelines for setting priorities among new storage and rehabilitation storage projects; requires studies of (1) feasibility of assessing recreational user fees to repay water storage project costs, (2) feasibility of collecting larger fees from consumptive water users who benefit from development of new state-owned water storage projects or from the rehabilitation of existing state-owned water storage projects, and (3) water storage laws and regulations by the Water Policy Committee; creates water storage state special revenue account; allocates additional tax revenues for water development; allocates 25 percent of the money available as grants in the water development state special revenue account and renewable resource development account to the development of water storage projects; eliminates 10-year limit on project development plans required in applications for large water use permits.
4/23/91: SENT TO GOVERNOR

SENATE BILL 314
Generally revises and clarifies water reservation process; allows available water from revoked or modified reservation to be appropriated; requires approval by BNRC of changes in reservations; allows transfers of water reservations and establishes criteria for such transfers.
4/20/91: SIGNED BY GOVERNOR
4/20/91: EFFECTIVE DATE

SENATE BILL 368
Establishes enforcement provisions for violations of Montana water use laws; provides for disposition of penalties.
4/23/91: SENT TO GOVERNOR

SENATE BILL 386
Clarifies that a water right may be temporarily changed.
4/16/91: SIGNED BY GOVERNOR
10/1/91: EFFECTIVE DATE

SENATE BILL 425
Extends period of initial water leases; modifies initial and final water leasing study report process; increases number of designated stream reaches; extends term of water leasing study; extends authority for Department of Fish, Wildlife and Parks to accept contributions to lease water; provides an appropriation.
4/25/91: SIGNED BY PRESIDENT

SENATE BILL 426
Clarifies water reservation process for federally designated wilderness areas.
4/2/91: BILL KILLED

SENATE BILL 434
Temporarily closes a designated portion of the upper Clark Fork River basin to further appropriations, except appropriations for groundwater; suspends action on applications for reservations in the upper Clark Fork River basin; modifies priority dates for pending water reservations in the upper Clark Fork River basin; requires an applicant for a groundwater permit to submit a report regarding the source of the groundwater and department findings regarding the source; creates and establishes duties for an upper Clark Fork River basin steering committee.
4/25/91: SIGNED BY PRESIDENT

SENATE JOINT RESOLUTION 10
Urges Congress to adopt legislation authorizing the Assiniboine and Sioux tribes of the Fort Peck Indian Reservation to enter into water agreements for the delivery, use, or transfer of water within or outside the reservation.
3/15/91: FILED WITH SECRETARY OF STATE

SENATE JOINT RESOLUTION 16
Urges use of all available methods to ensure maintenance of adequate water levels in Fort Peck Reservoir.
4/15/91: FILED WITH SECRETARY OF STATE

SENATE JOINT RESOLUTION 24
Endorses strategies detailed in Montana Pick-Sloan initiative developed by the Montana Pick-Sloan Advisory Committee and DNRC.
4/15/91: FILED WITH SECRETARY OF STATE

SENATE JOINT RESOLUTION 25
Requests Water Policy Committee to conduct an interim study of the need for and feasibility of state regulation of Montana's geothermal resources.
4/15/91: FILED WITH SECRETARY OF STATE

If you have any questions or need clarification on a particular bill, please call Laurence Siroky, Water Resources Division Assistant Administrator, at 444-6610.

WATER MANAGEMENT WORKSHOP PLANNED

The Canyon Ferry Limnological Institute and the Western Watercourse are sponsoring a Missouri River water management workshop for educators and resource managers June 10-14 at the Canyon Ferry Limnological Institute near Helena.

From its headwaters in Montana to its confluence near St. Louis, the Missouri River serves the water needs of numerous groups, including municipalities, farmers, businesses, fish and wildlife, recreationists, navigators, and power producers. Water resource managers have long worked toward a common goal of management harmony within the Missouri River basin. Satisfying the needs of all user groups, however, has proven evasive — more hypothetical than real — and coping with changing priorities and emerging issues has led to management conflict and intense debate.

Why can't the Missouri River meet all water users' needs? What are the river's limitations? What is its future? The workshop will explore the answers to these and other questions from three perspectives: scientific, socioeconomic, and political.

By emphasizing hands-on experience, the workshop should enhance participants' awareness and understanding of river basin management concepts and issues. Science educators of all grades, as well as natural resource agency personnel interested in broadening their science backgrounds and strengthening natural resource management knowledge and skills, are urged to attend.

The workshop agenda includes field activities, tours, and special evening programs that will give participants the opportunity to interact with people who actually manage the Missouri River. Speakers from local, state, and federal organizations will help address major themes. Although the workshop focuses on the Missouri River, all information and materials presented should easily be adapted to use for other river basins.

Workshop topics and highlights include the following:

Interact Sessions:

Management Perspectives: Upstream and Downstream
Water Rights and Water Laws
Views of Water User Groups
Potential Future Management Scenarios
Hydrology of the Missouri River Basin
Groundwater Resources Demonstration Project
Atmospheric Resources
Wild and Scenic Rivers
Endangered Species

On-the-Water Field Units:

Limnology
River/Reservoir/Lake/Wetlands Management
Biology and Water Quality Investigations
Fisheries Management
Water Fowl Management
Basic Wet Lab Chemistry

Evening Sessions:

Natural History of the Missouri River Basin
Aquatic Insects, Fly Fishing Demonstration and Clinic
Land-Use Presentation and Gem Search
Geology and Geothermal Resources

The Canyon Ferry Limnological Institute is located on the Missouri River at the Canyon Ferry Dam (Canyon Ferry Reservoir is the river's uppermost major reservoir). Workshop participants will discover numerous ways to enjoy and experience the region's rich natural and cultural resources, abundant fish and wildlife and recreation, and unlimited environmental study potential.

Since the workshop is limited to 30 participants, please register early. The $250 fee covers lodging, meals, transportation, instruction, four days of on-the-water field units, materials, and tours; graduate credit is $40 extra.

If interested, please send a confirmation letter including your address and telephone number, along with a check for the $50 preregistration deposit made payable to the Canyon Ferry Limnological Institute, to 504 Dearborn Avenue, Helena, MT 59601. For more information, call the Institute at 443-2745 in Helena, or Dennis Nelson, Western Watercourse Program Director, at 994-5392 in Bozeman.

The Canyon Ferry Limnological Institute has provided water resource and water quality workshops for gifted students and in-service teachers since 1984; the Missouri River Water Quality Network is one of its recent projects.

The Western Watercourse, a western United States water education project located in Bozeman, receives funding from the U.S. Bureau of Reclamation. Its efforts are geared toward working with local, state, and federal water management organizations and education groups to develop water education programs.

Judith Basin Conservation District sponsored a WET workshop in Stanford, Montana, April 5-6. Thanks to Pat Bodner for helping to make the workshop a success!

Wanted: Local Sponsors

The importance of local-level involvement in planning and implementing a WET or Adult Water Awareness workshop cannot be overstated. When local officials share their thoughts on local water resource issues, they make a difference. When an organization or club provides equipment or refreshments or shares in other workshop expenses, it also makes a difference.

Anyone can help sponsor a workshop. This year, for instance, has seen the participation of a number of conservation districts and interest groups. The first step toward sponsorship involves contacting Montana Watercourse to discuss potential dates and determine the sponsor's level of involvement. The Watercourse will develop a workshop agenda and arrange college credit. Since workshops are scheduled on a first-come, first-served basis, groups interested in co-sponsoring a workshop should plan on contacting Montana Watercourse at least six weeks prior to an anticipated meeting date. Please call 994-5392 for details.

MEET THE 'OLD BUFFALO HUNTER'

The Old Buffalo Hunter (educator Greg Smith) gazes out over the Yellowstone River as he ponders his message for Montanans.

The time is the mid-1800s, and the Old Buffalo Hunter is delivering a simple message: *Water is important and shouldn't be taken for granted.*

If you listen closely, he'll tell you great tales of trappers and traders and of the adventures of Lewis and Clark. He'll also reflect on hard times in the 1800s and assure you that change will not occur on its own. Growing crops will be tough because there's no rain; those geysers down Yellowstone way are foul and odiferous freaks of nature around which no national park should be built.

Just as these stories reach their loftiest heights, the Old Buffalo Hunter steps forward into the 1990s and assumes the identity of alter-ego and creator Greg Smith.

As he displays props and education materials developed by Montana Watercourse's Project WET (Water Education for Teachers) Montana, Greg will share with you a historical rendition of water use in Montana — how water shaped the land both physically and socially.

The *Liquid Treasure* is a trunk filled with artifacts, photographs, oral histories, and writings from Montana's past that Greg uses to spin his tales of water's past and future.

Most importantly, Greg and the Old Buffalo Hunter urge you to discover the underlying meaning of a treasured gift from an old Indian chief — one that reflects the most significant and unique factor in preserving the integrity of water resources.

Can you guess what it is? To find out, plan on attending a WET seminar or workshop in your area next fall.

A Project WET Montana coordinator, Greg is teaching 14 water education workshops and seminars this spring for Montana teachers. He graduated from Eastern Illinois University with a degree in biology and later received a secondary teaching certificate from Montana State University. Since then, he has enjoyed an 11-year career with the National Park Service at Glacier National Park as an interpreter and ranger. (His Old Buffalo Hunter character is no stranger to park visitors and elementary students.) Greg also served as director of the Woodleaf environmental education program in Challenge, California. He labels his role as the Old Buffalo Hunter for the past eight years as "a living history presentation that links history with natural resources education."

To find out more information about the Old Buffalo Hunter and Project WET Montana, call Greg Smith at the Montana Watercourse office in Bozeman at 994-5392.

Montana Watercourse Appreciates Support

As the old saying goes, *actions speak louder than words.* Cliches aside, these words sum up the type of support Montana Watercourse has received during the past year from a number of water resource groups. All too often, it's easier to offer help than to take the next step and actually do something. These groups have taken that second step.

Among those who have devoted their time, energy, and, in some cases, financial support to Montana Watercourse programs are local conservation districts, Soil Conservation Service offices, the Montana Bureau of Mines and Geology, the Montana Trout Foundation, Patagonia Inc., the U.S. Bureau of Reclamation, the Montana Department of Natural Resources and Conservation, the Glacier Institute, and the Bureau of Indian Affairs.

The product of this dedication, support, and cooperation is a successful education program. The workshop leaders, volunteer facilitators, and educators who teach WET workshops and the Adult Education Water Rights workshops are grateful to those who shared their time and talents during the past year. Thanks are also extended to the guest lecturers for their excellent instruction and generous commitment of time.

DIVISION DECENTRALIZATION UNDER WAY

'Water Rights Field Offices' now 'Water Resources Regional Offices'

As a means to better implement its various water management programs, the Water Resources Division has adopted a decentralized form of operation. Working through its nine field offices in Billings, Bozeman, Glasgow, Havre, Helena, Kalispell, Lewistown, Miles City, and Missoula, the division hopes to provide improved and more consistent public service to the state. Formerly known as *water rights field offices*, the offices have been renamed *water resources regional offices* to reflect their broadened role in division-wide activity.

Through the years, the regional offices have proven this type of decentralized organizational structure to be extremely effective — especially considering Montana's size — toward implementing and administering water right programs. Acknowledging this experience, other Water Resources Division program managers have turned to the field offices for help with a variety of water management efforts such as dam safety, water well contractor regulation, state water project administration, and a variety of general water planning and management activities.

While the shift of field office operations from solely a water-right to a division-wide focus has clearly proven beneficial, the regional offices have neither the structure nor funding necessary to deal effectively with expanded duties. As a result, the Water Resources Division reviewed its operating structure and made revisions to support a practical, decentralized form of program administration. By adopting this plan, the division hopes to:

- provide a higher level of public service
- increase the effectiveness of its programs
- better accommodate changing conditions that affect its programs,
- provide articulate policies and objectives to ensure program consistency
- speed up decision-making

The relationship between the regional offices and central management can be compared to that of a contractor. As work units separate from central management (the division's bureaus), the regional offices provide the *contracted service* of implementing division programs. An annual operating plan — or *contract* — defines the scope of work to be accomplished by the regional offices, while the operating plan budget defines the funding level available under the contract to complete the agreed-upon scope of work.

Currently in transition, the regional offices will not see major changes in the near-term. Over time, though, and as funding and staffing allow, the scope of decentralization will expand. How much and to what extent will depend largely on the cost-efficiency of a centralized-versus-decentralized approach to each division program.

Former water planning section supervisor Gerhard Knudsen was recently hired as assistant administrator for regional office services to oversee the nine offices. Knudsen brings more than 20 years of natural resource experience to the new position and looks forward to working with the regional office staff.

Regional office managers and division staff met for several days in Helena this month to discuss the decentralization concept, concentrating on its advantages and disadvantages as well as staff concerns; another meeting is planned for mid-May to discuss development of operating plans for the upcoming fiscal year.

Future *Water Lines* issues will focus on individual regional offices to introduce you to their staffs and familiarize you with their services.

GOVERNOR PROCLAIMS 'JACK GALT DAY'

In recognition of Jack Galt's past and continued service to Montana's citizens, Governor Stan Stephens declared Thursday, February 7, 1991, *Jack Galt Day*. The governor presented a formal proclamation and plaque to Mr. Galt at February's Board of Natural Resources and Conservation meeting — Galt's first as a new member.

Mr. Galt has served in the Montana House and Senate (Senate president during the 1987-89 session), as well as on the Reserved Water Rights Compact Commission, State Water Plan Advisory Council, Water Policy Review Advisory Council, Water Policy Committee, and Hydropower Task Force.

Through his leadership in the area of natural resource issues, the water development program was created, statewide adjudication efforts were initiated, reserved water rights negotiations began in earnest, and an efficient water data management system was developed.

Governor Stephens commended Mr. Galt on his dedication, objectivity, and common sense that have helped frame Montana's water policy and management over the past 18 years, and for his competence and professionalism as a Montana legislator. The governor said that Mr. Galt will continue his dedicated service to Montana through his membership on the Board of Natural Resources and Conservation.

WATER ISSUES RANK HIGH ON CAPITOL HILL

Groundwater protection and clean water in general are identified together as the top environmental concern of the 102nd Congress in a polling of senior staff members in 351 House and Senate offices.

The poll, conducted at the start of each session of Congress by the Washington public relations firm of Fleishman-Hillard, marks the first time that water concerns have ranked at the top of environmental priorities. The 1990 rank for groundwater was third, while in 1989 it placed fourth among top ecological concerns. The protection of groundwater takes over the top spot from clean air, which received major legislative action in the last Congress.

When asked to name the major environmental priorities for the new Congress, staffers identified groundwater and clean water as the top issue (26 percent), followed closely by solid waste management.

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'SALMON SUMMIT' DISAGREES OVER COLUMBIA RIVER FLOWS

The Salmon Summit, a conglomeration of 30 Columbia and Snake river interests, has conducted its final meeting to try to reach agreement on a package of measures designed to save four imperiled Snake River salmon stocks, but could not agree on Columbia River flows, harvest restrictions, or habitat protection.

There was consensus that Idaho Gov. Cecil Andrus's save-the-salmon plan be studied by the U.S. Army Corps of Engineers for potential implementation in 1991, but the plan faces heavy opposition from the navigation and irrigation industries. Andrus proposed reconstruction of four lower Snake River reservoirs so they can be drawn down to approximate a spring flood, which historically whisked young salmon smolts to the sea in a matter of days. For this year, however, the summit decided to release 900,000 acre-feet of water — twice the amount used in past years — to try to create some flow in the Snake River reservoirs. Salmon advocates contend, however, that pouring even 900,000 acre-feet on top of slack water will not help the smolts that much — that 90 percent of them will still be killed along the way. "The additional water is entirely inadequate for the needs of the fish," according to Andy Brunelle, special assistant to Andrus. "Not enough upstream water exists to solve the problems that those dams have created."

Later this year, the four salmon stocks will be considered for listing as threatened or endangered species.

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WATER LINES

NEWS FROM THE WATER RESOURCES DIVISION

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION • OCTOBER 1991

DEPARTMENT NEWS

GOVERNOR'S ROUNDTABLE DISCUSSES FORT PECK LAKE AND THE MISSOURI RIVER

As part of the state's efforts to improve the management of Fort Peck Lake and the Missouri River, Governor Stan Stephens convened a Roundtable Conference in Glasgow on September 5, 1991, to discuss this issue. Although one of the Roundtable's objectives was to help coordinate and guide these ongoing activities, its primary goal was to provide an opportunity for people with interests in this area to help shape an agenda for the future of Missouri River country. The Roundtable also addressed a number of broader issues such as local and regional economic development, tourism, and wildlife management. More than 100 people from Missouri River country participated in the Roundtable, including U.S. Senator Conrad Burns, several state legislators, native Americans, farmers and ranchers, anglers and recreationists, local business people, and the news media. After Governor Stephens and Senator Burns presented opening statements, a panel discussion led to establishing major issues and concerns for Fort Peck Lake and the Missouri River. This discussion elicited an enthusiastic response and active participation from conference attendees.

Participants later met in small groups to focus on three questions: (1) What is your vision of the future of Fort Peck Lake and the Missouri River? (2) What are the priorities for improving the management of these areas? (3) How should we achieve these visions and priorities, and what strategies are needed? The following statement summarizes the groups' visions:

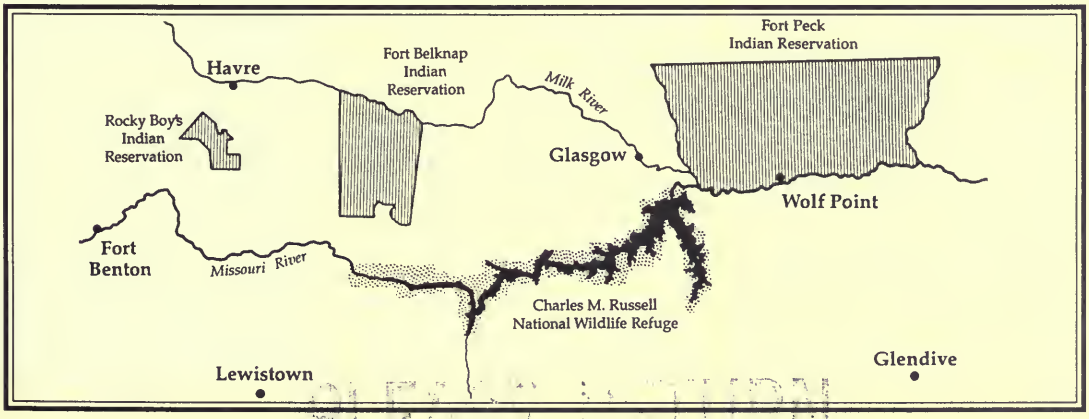
Protect and enhance the natural resources of the river and lake to optimize multiple recreational and other economic development opportunities.

Conference participants recommended forming a regional organization to achieve the visions and priorities discussed at the conference. This organization should represent the region's many diverse interests, and it should focus both on economic development and resource management issues throughout Missouri River country — roughly from Fort Benton to Fort Union. A number of people suggested that the Montana Legislature formally create this organization to provide both visibility and credibility.

The organization would provide people with a regional and local forum to implement several of the strategies that emerged from the Roundtable, such as:

- Developing a regional economic development and resource management plan
- Pursuing increased funding through the legislature for parks and recreation development
- Seeking federal assistance for multiple purposes, including recreation, irrigation, and municipal development
- Promoting and advertising Missouri River country

The Departments of Natural Resources and Conservation and Fish, Wildlife and Parks have completed a draft of the Roundtable report, which is now available for public review and comment. Contact Matthew McKinney at DNRC, 444-6889, for a copy or additional information.



MISSOURI BASIN WATER RESERVATIONS

In 1985, the Montana Legislature directed the Department of Natural Resources and Conservation to initiate a proceeding to allow water reservations in the Missouri River basin. The legislature felt that this basinwide water reservation system would encourage more coordinated water resource development in the basin and form a strong foundation for protecting Montana's share of Missouri River water from downstream states. According to the law, only public entities such as local governments, conservation districts, and state and federal agencies are allowed to apply for and hold water reservations.

Water reservations provide public entities with an opportunity to set aside water for future diversion and consumptive uses, and to allocate water for maintaining instream flows for the protection of aquatic life, recreation, and water quality. Any reservations granted during this process will maintain a priority date of July 1, 1985, though years or decades may pass before reservations for consumptive use actually are developed. Water reservations cannot affect water rights in existence prior to July 1, 1985.

DNRC coordinates the water reservation process, but the Board of Natural Resources and Conservation decides whether to grant the reservations. The Board will make its decision on reservation applications in the Missouri basin after considering evidence that includes information provided by the water reservation applications, an environmental impact statement, and a contested case hearing.

Because of the Missouri River basin's vast size, the reservation proceeding has been divided into two parts. Applications for water in the basin's upper portions, which encompass the drainage area upstream from Fort Peck Dam, were due by July 1, 1989, and are now being considered. After an environmental review and contested case hearing, the Board has until July 1, 1992, to make its final decision on the upper basin applications. Applications for water in the basin below Fort Peck Dam, which also includes the Little Missouri and Milk River basins, were due by July 1, 1991, and will be subjected to a similar environmental review and hearings. The Board has until December 31, 1993, to act on these applications.

STATUS OF UPPER BASIN APPLICATIONS

Forty public entities submitted applications to reserve water in the Missouri basin above Fort Peck Dam. Eighteen municipalities applied for water to meet future growth, and 18 conservation districts requested water for 220 proposed irrigation projects. The Department of Health and Environmental Sciences applied to reserve instream flows at four points on the Missouri River to protect water quality, and the Department of Fish, Wildlife and Parks applied to reserve instream flows on 283 stream segments to protect fish, wildlife, and recreation. The U.S. Bureau of Land Management requested instream flows on 31 streams for fish, wildlife, and recreation, and the U.S. Bureau of Reclamation has applied to reserve water from the Missouri River near Virgelle to divert to the Milk River basin for existing and new irrigation.

The draft environmental impact statement (EIS) that addresses these applications was completed in early July and circulated for public review; more than 700 copies have been distributed. Informational meetings and public hearings on the draft EIS were held in ten Missouri basin communities during the first full week in August. September 16, 1991, was the last day to submit comments on the draft EIS.

DNRC is now preparing the final EIS for upper basin applications, which it plans to complete by late fall. Oral comments on the draft EIS were heard at the public meetings, and about 80 individuals or groups have submitted written comments. The final EIS will include responses to all substantive comments made on the draft EIS.

More than 11,000 water right holders in the Missouri basin received notice of the pending water reservation applications, providing them the opportunity to file objections or present public testimony. The deadline for filing formal objections was August 30, 1991. Attorney Peter Stanley was appointed hearing examiner, and a scheduling conference was held September 19. The hearing will be held during January and February of 1992, with findings of facts and conclusions of law to be finished in April.

STATUS OF LOWER BASIN APPLICATIONS

Applications to reserve water in the basin below Fort Peck Dam were due to DNRC by July 1, 1991. DNRC received water reservation applications from 14 municipalities to provide water for future growth, 12 conservation districts for future irrigation, and the Department of Fish, Wildlife and Parks for instream flows to protect fish, wildlife, and recreation. Work on a draft EIS to address these applications will begin soon.

GROUNDWATER APPLICATION REQUIREMENTS AND COST CHANGES

A new law that became effective July 1 requires all applicants for new beneficial uses of groundwater from a well or developed spring that exceeds 35 gallons per minute (gpm) or 10 acre-feet (af) of water per year to obtain a permit before any development takes place. Prior to July 1, the limitation was less than 100 gpm.

Groundwater permit applicants are required to pay a one-time fee of $1 for each acre-foot of water they request in addition to the current, graduated fee scale that ranges from $50 to $250, depending on the amount of water requested.

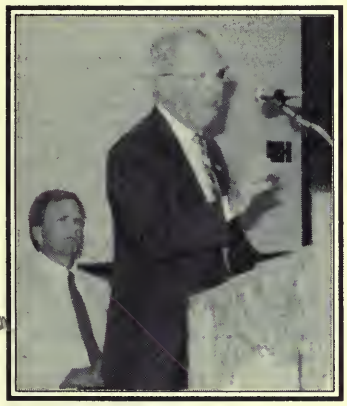
Applicants for developments of 35 gpm or 10 af or less need to file a Notice of Completion along with a $20 filing fee within 60 days after completion to receive a Certificate of Water Right.

Ten dollars of the filing fee and the $1 administrative fee will be used for a new groundwater monitoring program administered by the Montana Bureau of Mines and Geology.

PEOPLE IN WATER

THE BOARD OF NATURAL RESOURCES AND CONSERVATION

The Board of Natural Resources and Conservation is comprised of seven members appointed by the Governor. Its responsibilities include adopting administrative rules, acting on proposed water reservations, making decisions required by the Montana Major Facility Siting Act, adopting floodplain delineations, and overseeing operations of state water projects. The Board meets bimonthly in Helena. Current Board members include:



Gary Fritz, Water Resources Division Administrator, listens as Gov. Stan Stephens addresses Western States Water Council members at its July conference in Montana.

TERRY ANDERSON, a senior associate with the Political Economy Research Center in Bozeman, has taught economics at Montana State University since 1972. He has published one book on water policy and co-authored another. As a Fullbright fellow at Canterbury University in New Zealand, Anderson served on a task force that conducted research on New Zealand's water institutions and that country's water marketing potential.

JOHN BAILEY serves as president and chairman of the board for Dan Bailey's Fly Shop, a Livingston-based corporation that owns the distinction of being the largest U.S. producer of hand-tied fishing flies. A Livingston native, Bailey also is the president and chairman of the Political Economy Research Center in Bozeman, a state council director for Trout Unlimited in Montana, an organizer and founder of the Yellowstone River Sediment Study, and a member of the founding board for the Montana Environmental Information Center.

FRED BOOTH is a farmer in the Highwood area. A former member of the Montana Agricultural Stabilization and Conservation Service Committee, Booth serves as a director of Norwest Bank of Great Falls and is a member of the President's Council at Montana State University.

GERALD FEDA is a retired railroad engineer and currently works as a real estate broker. Feda served in the Montana State House of Representatives during the 1969, 1977, and 1981 legislative sessions.

JACK GALT is a former legislator who most recently served as president of the Montana State Senate. A Martinsdale livestock dealer and broker, he served as a state legislator from 1973 to 1990. He also serves as a director for First Bank of Helena.

ED MCHATTON, a self-employed contractor in Lolo, has extensive experience with flood and sprinkler irrigation systems. McHatton also has worked with various federal agencies on streambank protection.

JANICE REHBERG chairs the Board of Natural Resources and Conservation. A 1982 law school graduate of George Washington University, she earned an undergraduate degree from Washington State University. Rehberg served as an administrative aide to Montana House Republicans during the 1983 legislative session. Her husband, Dennis, is Montana's Lieutenant Governor.

REGIONAL NEWS

RENO APPREHENSIVE ABOUT REQUESTED WATER TRANSFER

RENO, Nev.—A pipeline that would transport water from an aquifer in California to fuel development north of Reno has pitted city against county, state against state.

Washoe County, Nev., where Reno and its sister city Sparks are located, wants to transfer 13,000 acre-feet annually from Fish Springs to Lemmon Valley. The springs are in California, just over the Nevada border, and opponents say the water would lower the water table in Honey Lake, a shallow aquifer. The Honey Lake Project would bring green grass and houses to an area that presently contains little but cows and sagebrush.

Many are apprehensive about the impacts of such extensive expansion. "There's been a continuing debate for the last two decades around here over growth versus no growth," Reno Public Information Officer Ken Harvey commented. "A sizable percentage of Reno believes that growth to this extent could irreparably damage the environment and the quality of life here."

Reno residents also fear they will foot much of the bill for the indirect costs associated with the project. Washoe County officials promise not to increase taxes to fund the pipeline and intend to use water hook-ups and low-interest loans to pay for it. But Dave Morgan, a Reno media consultant, explained, "As this area urbanizes, it will need services — roads, police protection. . .the money to pay for those will come out of the city."

In addition, sediment in the Honey Lake water could tax the regional sewage treatment plant. Reno's drinking water, which primarily comes from the Truckee River, has only 70 parts per million (ppm) total dissolved solids, but Honey Lake contains between 250 ppm and 350 ppm. Processing this water could make it difficult for the plant to meet the conditions of its discharge permit.

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MONTANA'S WATER: THE FUTURE IS IN YOUR HANDS

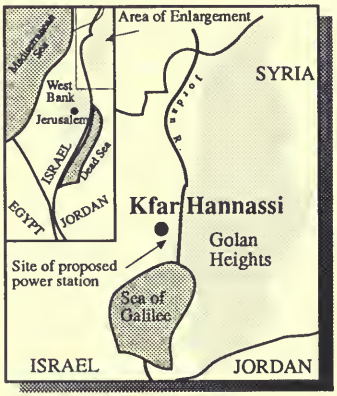
Artist: Shirley Cleary

Reminder:
Water Awareness Month is January 1992

For more information, contact the Montana Watercourse, 994-5392

JORDAN RIVER CONTROVERSY

JERUSALEM—A proposal to build a hydroelectric dam on the biblical Jordan River has stirred up a controversy in Israel that ultimately may have to be settled by the nation's cabinet. Protests against the dam already have been launched under the slogan "Don't Stop the Jordan," and the Israel Environment Ministry claims that the 36-foot-high dam represents a safety risk.



The dam and artificial lake actually would enhance the 80-mile segment of the Jordan River between the Sea of Galilee and the Dead Sea, claims the Kibbutz that is planning the hydropower project. A group called the Society for the Protection of Nature in Israel, however, warns that the power plant would divert nearly a third of the river's flow to produce a mere 0.5 percent of Israel's electricity supply. "For a few pennies and a handful of kilowatts, the Jordan is being made extinct," stated the Yedioth Ahronoth newspaper.

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DEPARTMENT NEWS

Water Awareness Month

Why should Montanans care about the state's water resources? What can a person do to sustain the state's surface water and groundwater for future generations? These questions are only two of those asked in a brochure recently circulated to promote Water Awareness Month, January 1992. *Montana's Water—The Future Is in Your Hands* is the theme of this first-ever event, which hopes to attract the attention of school children, educators, and communities throughout Montana during the first month of 1992. Posters and informational brochures were sent to more than 3,000 teachers, schools, conservation districts, and extension facilities in the state during late October to urge their active participation in Water Awareness Month.

Water Awareness Month Background

Governor Stan Stephens and a multi-agency steering committee initiated this educational event to increase public awareness of the importance of Montana's water, the ways in which we use and affect it, and the complexities involved with managing it. This initiative led to the creation of an original poster to commemorate the event. This poster, designed by Montana artist Shirley Cleary, emphasizes the point that the future of Montana's water rests in the hands of the state's youth.

Statewide Contest

Expanding the "future" theme, a statewide contest for high school students is one focal point of special water awareness activities scheduled during January. In the Water Awareness Month Contest, secondary students are challenged to come up with creative responses to the questions: "What will be the major water resource challenge or problem facing Montana in the year 2000? How would you address it?" This contest offers young adults the opportunity to undertake self-directed projects in three categories (writing, art, and science) to learn more about Montana's water and win cash prizes while doing so!

Elementary School and Community Group Involvement

Elementary schools and community groups also are invited to participate in Water Awareness Month. For example, classroom teachers may borrow a Groundwater Flow Model Trunk available from Montana Watercourse (phone 994-5392) to teach their students about the nature of groundwater. Interested 4-H groups may plan special learning activities, such as developing a special edition community newspaper titled *Water: Read All About It*. This activity would let children become "newspaper reporters" and expect them to interview grandparents and others to produce a history of community water development and use.

Montana's Water
The Future Is In Your Hands

Community Events

Several communities already have planned water awareness events for January. For example, Project WET Montana (Water Education for Teachers) workshops and teacher in-service training already are scheduled for Columbia Falls, Chinook, and Townsend. Educators in Miles City will have the opportunity to attend "WET & WILD" workshops, which provide training and supplementary materials for youth educators interested in water and wildlife. Working with Montana Watercourse, the community of Augusta plans to hold a water rights workshop for interested adults to learn more about Montana water rights and water law. Other communities also may take advantage of water education programs available from the Montana State University Extension Service, the Montana Environmental Training Center, the Montana Department of Fish, Wildlife and Parks, and the Riparian Education Committee.

(continued on page 2)

Supporters and Contributors

Water Awareness Month would not have become a reality without the support of many individuals and groups. Sponsors include the American Water Works Association (AWWA), Montana Section of the AWWA, U.S. Bureau of Land Management, Burlington Northern Foundation, Montana Department of Natural Resources and Conservation, Montana Department of Fish, Wildlife and Parks, Montana Environmental Training Center, Montana Power Company, U.S. Bureau of Reclamation, Montana Water Resources Center, Western Watercourse, Mountain Water Company, U.S. Fish and Wildlife Service, U.S. Geological Survey, and the Water Quality Bureau of the Montana Department of Health and Environmental Sciences.

Contributions to Water Awareness Month came from HKM Associates, Montana Department of Agriculture, Montana Natural Resource Youth Camp, Montana Salinity Control Association, Robert Peccia and Associates, Inc., Robert Redford (actor/director), and the Western Area Power Administration of the Department of Energy.

For More Information

For more information about the wealth of water education resources and materials available for use during Water Awareness Month, contact Mary Ellen Wolfe, Montana Watercourse, Montana State University, 335 Culbertson Hall, Bozeman, MT 59717-0057, phone: 994-5392.

Water Awareness Month Takes to Television

Since Water Awareness Month is meant to be fun and interesting, a special educational television program titled *Montana's Water: The Future is in Your Hands* focused on this aspect. The program asked a panel of young people, representing future generations of Montana water users and water managers, to question two adult panels comprised of contemporary water users and managers to predict their "water future." The student panel heard from historical figures such as "Old Sod Buster," who revealed how water use in Montana today is rooted in the past. In a fashion comparable to that of high school participants involved in the Water Awareness Month Contest, the student panel gathered information to help them understand the present water resource situation, thereby enabling them to construct a realistic scenario of major resource challenges that Montana will face in the year 2000.

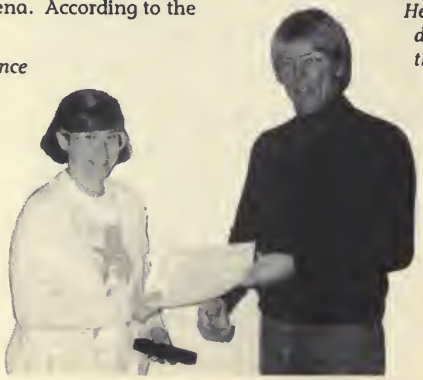
The television program was broadcast live from KUSM in Bozeman to classrooms throughout Montana on January 15 and 22 through the new Montana Educational Telecommunications system (METNET). Students in classrooms as far away as Wolf Point were able to use a toll-free number to call in with questions for the panelists. Using this method, the METNET system expanded the "one classroom" concept—that held in a television studio and engaging future generations of Montana water users in discussion with contemporary water users and managers—to classrooms throughout the entire state, thereby expanding the water awareness "circle" to all areas of Montana.

This television program was produced through the efforts of Montana State University, the Office of Public Education, the Office of the Commissioner of Higher Education, the Montana Department of Fish, Wildlife and Parks, the Western Watercourse, the Montana Watercourse, and KUSM.

PEOPLE IN WATER

Pam Weinmeister, program assistant in Glasgow's water resources regional office, recently received an "Outstanding Performance Award" while attending a program assistant workshop in Helena. According to the certificate she received, Pam

has exhibited exemplary performance and initiative in carrying out her wide-ranging duties as a program assistant. Of particular significance is the foresight she displayed in promoting the idea of having regional office staff directly enter water right information into the centralized database in Helena. She thought it could be accomplished and, through many hours of hard work, the concept became reality. From her efforts, we now see all of the regional offices not only linked together through the mainframe computer in Helena, but they also have the capacity to directly enter water right information into the centralized database. It is clear that without Pam's vision, perseverance, and computer abilities, we would not have reached this point, especially in such a short time.



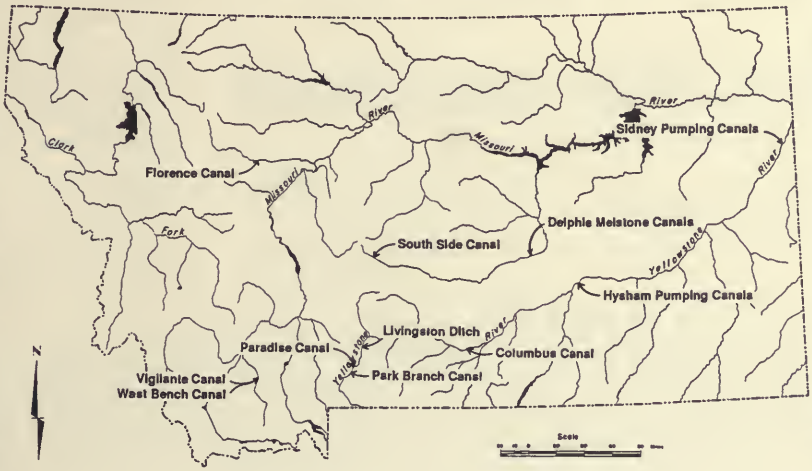
The certificate was signed by DNRC Director Karen Barclay and Water Resources Division (WRD) Administrator Gary Fritz. Gerhard Knudsen, WRD Assistant Administrator, presented the certificate to Pam.

Canal Project Ownership Transfer

The Department of Natural Resources and Conservation (DNRC) currently owns more than 50 water projects. These projects are divided into four categories: municipal water supplies, reservoirs only, reservoirs with canals, and canals only.

Because of action taken by the 1991 Montana Legislature (House Bill 814), DNRC is allowed to abandon, sell, or otherwise dispose of 11 canal water projects.

House Bill 814 provides that these projects must be transferred to private ownership by June 30, 1995. If these projects are not transferred, the project associations will be responsible for paying the state's administrative costs to operate the projects. The projects involved are Columbus Canal, Delphia-Melstone Canal, Hysham Pumping Canals, Livingston Ditch, Florence Canal, Paradise Canal, Park Branch Canal, South Side Canal, Sidney Pumping Canals, South Side Canal, Vigilante Canal, and West Bench Canal. The projects' water users associations will now have to vote on whether to assume private ownership of the projects, or to continue operating as state-owned projects.



House Bill 814 also provides an incentive for private parties to assume ownership of these projects. For example, the state will pay a water users association that takes over its projects "an amount equal to one year's cost of operating and maintaining the canal." The state may pay this amount either by making a direct cash payment to the association, or by crediting the same amount to the water users association's account carried on DNRC's books at the time of transfer.

During the latter part of 1990, DNRC met with the 11 water users associations at their annual meetings. At that time, DNRC explained its intent to transfer the ownership of its canal projects to the private sector. Toward the end of 1991, DNRC again met with the associations and explained the four-step procedure that DNRC must follow to transfer ownership of a project from the state to a private owner.

(1) DNRC must notify the water users association of the intent to transfer the project to private ownership.

(2) DNRC must receive a petition from the association, signed by stockholders representing two thirds of the stock, that approves negotiation and development of a proposal to transfer a project.

(3) DNRC will schedule meetings with the association to negotiate a final proposal.

(4) DNRC will present the final proposal to the association, allowing the association 30 days to exercise its veto power by filing with DNRC a petition of protest signed by 30 percent of the association's stockholders. If the association files this petition of protest with DNRC, a project cannot be transferred to private ownership without the consent of the Montana Legislature.

DNRC also presented the canal project water users with a draft plan of transfer. This plan explains the four-step transfer process, proposes a timetable for the various steps, describes general issues common to all or most projects, and offers guidance on project operation, maintenance, and administration. The plan also offers to help resolve electrical power cost issues, suggests research into the type of organizational structure the water users could adopt and the tax implications of each type of structure, and discusses appraisals to determine a project's fair market value.

Any of the canal projects not transferred to private ownership by June 30, 1995, will be charged by DNRC for administrative costs. These costs could include wages and expenses for services such as engineering, surveying, water-measuring, contract development or transferring, legal services, water billing, meetings, and overhead (office space, lights, heat, telephone, computers, etc.).

The 11 canal project associations generally favor transferring project ownership to their local organizations. DNRC has received two association petitions of approval and will begin meeting with the canal users to negotiate final proposals. The projects will be placed on a priority list in order of petitions received.

GLOBAL WATERFRONT

Gadhafi's Water Project

BENGHAZI, Libya — Thumbing his nose at the West, Libyan leader Moammar Gadhafi is relishing in one of his greatest dreams, completion of the first phase of the "Great Man-Made River," at a cost of some $5 billion. While the wisdom of the project remains in question, its size is awesome: a thousand-mile long, 13-foot-diameter pipeline that will transport 523 million gallons daily from wells in east-central Libya to populated coastal areas. "The small, poor, backwards, illiterate people of Libya made the river without any loans or help from America with all its strength and wealth," Gadhafi proclaimed during a ceremony that formally opened the project. A report by the Associated Press, however, noted the project was built by South Koreans and Thais and designed by Americans and Europeans. After completion of the first of five planned phases, extending the pipeline to other areas of the nation will cost an estimated $20 billion to $25 billion more, the report said.

"The whole Man-Made River is just a great uncertainty really, but it's Gadhafi's pet project," Angus Henle, an expert on Libya for the London-based Middle East Economic Digest, told the Associated Press. "He wants to be seen as something other than the scourge of the West," said Henle. Critics say there are no assurances the aquifer feeding the pipeline will last 50 years, as Gadhafi claims.

Reprinted with permission from U.S. Water News (October 1991, Vol. 8, No. 4).

REGIONAL NEWS

BLM Sued over Alaskan Rivers

A recent Bureau of Land Management (BLM) policy that suspends Wild and Scenic River studies on its extensive Alaskan land holdings is being challenged by a legal suit from American Rivers (AR), the river conservation group.

AR contends that BLM is justifying the action through a misinterpretation of the Alaska National Interest Lands Conservation Act (ANILCA), allowing many state rivers to be opened to development as well as the diversion of waters to California. AR is joined in the suit by the Sierra Club and the Wilderness Society.

The conservation groups are backed in their legal action by Rep. George Miller, D-Calif., House Interior Committee Chairman, and Rep. Bruce Vento, D-Minn., chairman of the subcommittee on public lands. BLM's action "is so tenuous as to constitute a virtual invitation to litigation," Miller said.

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WATER LINES

NEWS FROM THE WATER RESOURCES DIVISION
DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION • APRIL 1992

DEPARTMENT NEWS

WATER MEASUREMENT PROGRAM UNDERWAY

In 1991, the Montana Legislature passed House Bill 908 to establish a water measurement program to designate chronically dewatered watercourses throughout Montana. Once a stream has been designated as chronically dewatered, the water users will have two years to install controlling works and measuring devices on their diversions.

The Department of Natural Resources and Conservation recently hired Ron Schofield as a program officer to spearhead the development and implementation of the new water measurement program. Schofield will be responsible for working on a system to designate chronically dewatered streams, drafting administrative rules for Board of Natural Resources and Conservation approval, and developing technical and educational material on water measurement devices.

Schofield most recently worked for DNRC's water resources regional office in Helena to provide technical assistance to the Montana Water Court on adjudication of existing water rights. His considerable experience with water use diversions also includes positions as manager of the Bitterroot Irrigation District near Hamilton, and manager of the Helena Valley Irrigation District.

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Photo by Jim Bond

Program officer Ron Schofield works on new water measurement program.

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DEPARTMENT NEWS

MIDDLE CREEK DAM GETS FACELIFT

Repairs are now underway at Middle Creek Dam south of Bozeman. According to Glen McDonald, DNRC Project Rehabilitation Supervisor, the repairs will bring the dam into conformance with current safety standards along with increasing the reservoir's water storage capacity. Construction at Middle Creek Dam began during May 1991 and is expected to be finished this fall.

Also known as Hyalite Reservoir, Middle Creek Dam is a popular recreation area in Montana. As part of the project's rehabilitation, a new campground called Chisholm Campground has been built in the area.

Other changes to the dam include construction of a reinforced earth wall system on the dam's embankment and a new spillway system. Also, to increase the dam's height by 10 feet, workers placed conventional earth fill on each end.

Work that will be completed during this spring and summer includes completing the upper and lower spillway structures, replacing the existing bridge with a new road bridge and pedestrian bridge, and constructing a day-use picnic area in the auxiliary spillway area.

When completed, Middle Creek Dam will provide improved recreational facilities while simultaneously increasing safety measures.

MONTANA COMMUNITIES RECEIVE FLOOD INSURANCE DISCOUNTS

According to Karl Christians of DNRC's Floodplain Management Section, eight Montana communities have qualified for a 5 percent discount on new or renewed flood insurance policies; this discount became effective October 1, 1991.

The discount was awarded through the new Community Rating System program to help communities reduce the high cost of flood insurance for policyholders in their areas. As shown in the table at right, seven communities received a rating of Class 9, and one community received an even better rating of Class 8.

Beginning October 1, 1992, communities that are awarded a Class 8 rating or better will benefit from an additional 5 percent discount for each step increment received.

If you would like to find out whether your community is participating in the Community Rating System program, contact your local floodplain administrator, or call Karl Christians at 444-6654.

Communities	Total paid in premiums	Rating effective 10/1/91	Premium savings effective 10/1/91	Premium savings effective 10/1/92
Belt	$ 8,795	8	$ 440	$ 880
Cascade County	45,163	9	2,258	2,258
Circle	267	9	13	13
Great Falls	47,698	9	2,385	2,385
Lewis & Clark County	8,654	9	433	433
Miles City	35,866	9	1,793	1,793
Missoula	14,582	9	729	729
Missoula County	17,852	9	893	893
TOTALS	$178,877		$ 8,944	$ 9,384

REGIONAL NEWS

WATER LAW CONFERENCE SCHEDULED FOR JUNE

A conference titled *Uncovering the Hidden Resource: Groundwater Law, Hydrology and Policy in the 1990s* will be held June 15-17, 1992, at the University of Colorado at Boulder. This conference is geared toward helping lawyers and engineers who frequently work together in the context of groundwater management or litigation to better understand each other's field.

For more information, contact Katherine Taylor, Coordinator—phone (303) 492-1288, or fax (303) 492-1297.

REGIONAL NEWS

WIND RIVER APPEAL GOES BEFORE THE WYOMING SUPREME COURT

CHEYENNE, Wyo.—Attorneys for the State of Wyoming and the Wind River Indian Reservation tribes appeared before the Wyoming Supreme Court recently to present arguments in the appeal of a controversial water case.

According to Tom Davidson, a Denver attorney representing the state, the hearing was an appeal of a lower court decision which allowed the tribes to convert their reserved right for water in the Big Wind River to an instream flow right. The decision also granted the Northern Arapaho and Eastern Shoshone tribes administrative authority over all water rights—Indian and non-Indian—within the reservation, Davidson said.

The earlier case was "brought as a contempt action against the Wyoming state engineer for his alleged refusal to enforce their self-awarded instream flow," Davidson said. "They granted themselves... an instream flow using a portion of their reserved water right awarded back in 1985 for agricultural use and affirmed by the (Wyoming) Supreme Court in 1988," he said. That decision was affirmed by a split decision of the U.S. Supreme Court without an opinion in 1989, Davidson pointed out.

According to Davidson, if the district court decision stands, it would have two effects: "It would turn on its head over 100 years of state water rights administration, subjecting all of the people within or near the reservation to dual administration bodies — having the state engineer administer outside the reservation and having the tribes administer inside the reservation," he said.

Reprinted with permission from U.S. Water News *(January 1992, Vol. 8, No. 7)*

PEOPLE IN WATER

HELENA STUDENT WRITES WINNING ESSAY

Benjamin J. Holt, a Helena High School freshman, took first place honors in the writing category of the Water Awareness Month statewide contest held during January.

Sponsored by Montana Watercourse, the contest challenged secondary students to come up with creative responses to two questions: (1) What will be the major water resource challenge or problem facing Montana in the year 2000? (2) How would you address it?

This writing award is not Holt's first. As a fourth grader in Maryland, he won the superintendent's writing award for a short story published by the school district. One of his recent achievements is an AGATE scholarship to study math at the University of Utah. He also attended the University of San Diego's Sea Camp last summer to study marine biology.

Holt currently serves on the Student Council at Helena High and swims on the varsity swim team.

DNRC congratulates Benjamin on his award-winning essay!

Photo by Jim Bond

Benjamin Holt (left) with other contest winners and Governor Stephens at Capitol.

Other winners in the 1992 Water Awareness Month student contest are:

ART

1st	Josh Pallister Jefferson High School - Boulder
2nd	Mylantha Williams Hellgate High School - Missoula
3rd	Brittany Taylor/ Andrea Oldendorf Beaverhead County High School - Dillon

WRITING

1st	Benjamin Holt Helena High School
2nd	Paula Small Lodge Grass High School
3rd	Callie Brady Fairfield High School

SCIENCE

1st	Valerie Tomayer Sunburst High School
2nd	Josh DeVries Sunburst High School
3rd	Sarah Rhoads Butte High School

MADRID, Spain — As the second round of Mideast peace talks conclude, such topics as water resource management and environmental controls are expected to be thrown into future discussions. Due to the enormous political pressure of the peace-making process, however, any sort of water use agreements among Mideastern nations could take years to accomplish.

The political and religious tension in the Mideast has been identified as the principal reason for water shortages in the region. "If it were left to the technical people," a Syrian water official told the *Wall Street Journal*, "we could reach an agreement to guarantee everyone's needs in three months."

A Mideast water summit, planned for last November in Turkey, was cancelled when Syria insisted that Israel should not be allowed to attend. The Syrians complain that the Israeli-occupied Golan Heights area is a major watershed, and that the Israelis have been neglecting region-wide water management while building up their military. "Instead of building tanks, they should use their international support to build desalinization plants," said a Syrian official. Meanwhile, officials of Turkey, the intended host nation for the water summit, contend that Syria sponsors Kurdish terrorism inside Turkey to maintain leverage in the water talks.

Although any sort of Mideast water agreement is far removed from reality, Secretary of State James A. Baker III wants to interject the issue into peace negotiations now in order to demonstrate that the U.S. is already thinking ahead into a postcrisis era.

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MONTANA VERSUS EL NIÑO

State Continues Battle with Drought

What do the years 1276, 1539, 1761, 1931, and 1982 have in common? Each year represents the onset of drought periods in the United States that lasted anywhere from 10 to 38 years. When tree rings were analyzed in Nebraska during the 1960s, the results indicated that each of the past seven centuries has seen about three drought periods in North America, each lasting an average of 10 years. At any moment, this country seems to be either emerging from or entering into another drought.

A variety of theories explaining drought's origins and causes have surfaced throughout the years—each more scientific than its predecessor. The preeminent theory, however, points toward a meteorological phenomenon known as El Niño, or weather's "problem child." South Americans named this phenomenon El Niño (a reference to the Christ child) when they first began feeling the effects of warmed Pacific currents around Christmas time. As the warmed water moved eastward, both floods and drought devastated areas in North and South America, Australia, India, and Indonesia.

This spring saw record levels of precipitation fall on Arizona, New Mexico, and Texas, while Oregon, Washington, Idaho, and Montana remained mostly dry. Although El Niño's effects seem readily apparent during a one-year period, its full impact on Montana's weather typically extends throughout a three-year period. For instance, Montana's weather during 1991-92 closely parallels that of 1982-83 and 1986-87. Also, during both 1983 and 1987, each of the normally moist months of April and May remained dry, followed by a wet July.

If this trend continues, 1993 could undergo drought periods as harmful as those of 1984 and 1988. Weather experts predict that El Niño's 1991-92 effects will prove more severe than those of 1986-87, but not quite as bad as those of 1982-83. At that time, sea surface temperatures rose as much as 14 degrees Fahrenheit, and floods and drought attacked the earth's equatorial zone, leaving more than 1,000 people dead and $8.7 billion worth of damage.

Contingency Planning

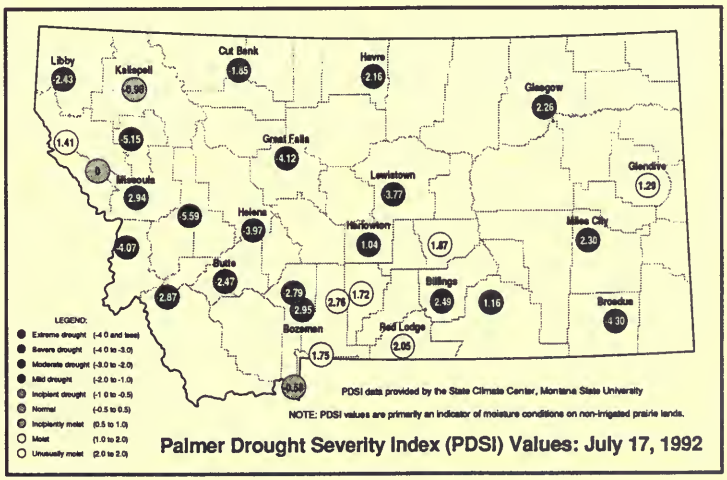
Many Montanans probably remember 1988 as the year when the state was on fire. Since then, drought contingency planning has progressed rapidly. For example,

- The legislature targeted the drought management issue for review through the state water planning process.
- During 1989-90, a steering committee explored the drought issue and recommended mitigation measures and early warning procedures.
- In 1991, a drought management section was adopted as part of the state water plan. The section takes a "proactive" approach toward drought management as opposed to the reactionary approach of the past.
- In 1991, House Bill 537 created the state Drought Advisory Committee and charged the committee with developing a state drought plan, reporting drought-monitoring information to the public, identifying high-probability drought areas, and helping local drought advisory committees reduce drought impacts.

1992 Conditions

Unlike prolonged drought periods of the past when conditions primarily were confined to specific areas in Montana, this winter and spring have seen drought conditions worsen on both sides of the Continental Divide. The near absence of

(continued on page 2)



Palmer Drought Severity Index (PDSI) Values: July 17, 1992

mountain precipitation throughout the winter has served as the driving force behind drought conditions that prevail despite precipitation levels at or above average since April 1. As of mid-May, more than half the state's counties showed precipitation levels at less than 75 percent of average for the year; at least 13 counties were shown at or below 50 percent of average annual precipitation.

Drought Advisory Committee

At the state Drought Advisory Committee's request, Governor Stan Stephens recommended that county commissioners form local drought advisory committees to monitor conditions in their areas and coordinate assessment and response measures with the state committee. Because a community's livelihood will determine the point at which a moisture deficit actually becomes drought, and because of Montana's size and diverse topography, a high degree of local involvement is needed to bring about successful drought mitigation efforts. At last count, more than 25 counties had formed drought committees that were meeting regularly. To help with local drought management efforts, each of the state's 56 county commissions has received several packets of drought-related information.

Representatives of nine local drought committees attended the Drought Advisory Committee's July 7 meeting to voice their neighbors' concerns and to report on local conditions. The committee representatives described local actions that had been taken to assemble necessary expertise and resources and also discussed how they addressed various drought impacts. The Drought Advisory Committee praised the local drought response efforts, including conservation, education, and personal and financial sacrifices.

On June 9, Governor Stephens officially declared Montana a drought disaster area.

State Declared Drought Disaster Area

On June 9, Governor Stephens officially declared Montana a drought disaster area. On July 16, during a special legislative session, the Montana Legislature authorized Governor Stephens to extend the disaster status if drought conditions persist or worsen throughout the rest of the summer.

Although 20 Montana counties have applied for federal disaster designation, the U.S. Secretary of Agriculture has yet to declare any Montana county as a "disaster area" to receive drought disaster assistance through U.S. Department of Agriculture programs. On June 19, however, 15 counties were declared eligible for the Emergency Haying and Grazing of Conservation Reserve Program.

Looking Ahead

When seasonal rains return to average levels, many people assume that the drought is over. While many of the drought's visible effects have disappeared recently, nature continues to remind us that drought conditions persist. For example,

- Large trees continue to represent a sizable source of potential fuel for wildfires because core moisture levels remain quite low in some areas.
- The absence of mountain snowpack means that continued streamflows rely strictly on continued precipitation.
- Dry springs and wells point to lower groundwater recharge rates.
- Normal irrigation levels on streams

(continued on page 3)

PROTECTING WATER RIGHTS DURING SHORTAGES

Water use in Montana is guided by the prior appropriation doctrine—that is, first in time is first in right. A person's right to a specific amount of water depends on when the use began. The first person to use water from a source established the first right, the second person could establish a right from the remaining water, and so on.

During a dry year, the person with the earliest date of use—the priority date—would have the first chance to use available water to the limits of the right. The holder of the second earliest priority date would have the next chance to use the remaining water, and so on.

If water is scarce, however, how do water users protect their rights? Voluntary water conservation is the best way to prevent or delay water shortages. Water users can switch to more efficient irrigation methods, line canals, or repair leaky pipes, for example. If water already is in short supply, water users may agree to cut back their diversions so that all users are able to divert at least some of their needed supplies. Such agreements are voluntary, however, and whenever the holder of a water right is unable to obtain enough water to meet that right, the holder can place a "call" on the river. By placing a call, the senior user is asking all users with later priority dates either to limit or stop water diversions.

If these other water users do not cooperate, the senior user can file suit with the district court or, in the case of adjudicated basins, ask that a water commissioner be appointed to settle the dispute.

A dispute usually will not be settled before a shortage has passed. In basins that experience chronic water shortages, however, two solutions are available. First, a water commissioner will monitor water in the basin to ensure that the prior appropriation doctrine is upheld. The commissioner will prevent all junior users from diverting flows if those diversions adversely affect water use by senior users. Commissioners are appointed by the district courts in decreed basins, often in response to a petition presented by the water users.

The second option involves actually closing heavily appropriated basins to future water use. To do this, however, the Department of Natural Resources and Conservation must receive a petition from the basin's water users. Petitioners must prove that no water is available beyond the amount needed to fulfill rights already in effect, and that any additional use would adversely affect prior appropriators' rights. A basin also can be closed through state legislation. To date, five basins in Montana are closed to new appropriations during certain times of the year, with considerations underway to close four others.

that range from 20 to 70 percent of seasonal flows could affect local fisheries.

In many instances, recent rains gave reservoir levels and dwindling hay and wheat crops a much-needed boost. In other instances, however, the rains arrived too late for winter wheat, or else they interfered with hay processing. According to recent Palmer Drought Severity Index and Surface Water Supply Index figures—used by the state to monitor and predict drought conditions—some areas have shown substantial improvement, such as the state's central and south-central regions. Other areas—the north-central, northwest, and southwest, for example—have been granted a reprieve for now. The Bitterroot Valley, the Mission Valley, and the Rocky Mountain Front's east slope, however, have deteriorated to "severe" and "extreme" levels.

The Drought Advisory Committee will continue its monthly meetings to monitor and report drought conditions, assess drought impacts, and recommend appropriate responses. The committee also will continue to invite county committee members to attend state meetings and keep state committee members updated on local conditions and needs. Committee staff will continue to compile and distribute educational materials and components of the state drought plan.

Some El Niño observers predict that 1993 will undergo a drought worse than that of 1992. If this prediction proves accurate, the state will find itself more experienced and better prepared to handle the drought conditions of the future.

GLOBAL WATERFRONT

WATER SEEN AS PRIMARY PROBLEM OF UNDERDEVELOPED AREAS

WASHINGTON—The World Bank produced a document for the recent United Nations Conference on Environment and Development at the Earth Summit in Rio de Janeiro, Brazil, that for the first time recognizes water as the primary problem of underdeveloped areas.

The paper calls on underdeveloped countries to take four steps to improve water supply and quality: (1) institute better water management, (2) encourage privatization, (3) use public funds primarily to supply communal needs, and (4) develop institutions to support better water and waste management. The paper points out that in many underdeveloped countries, industries waste and pollute water far more than is necessary. The document explains that if present population trends continue, many countries will soon reach the "zero point" in supply, and millions are now living in conditions of unacceptable sanitation.

Reprinted with permission from U.S. Water News, *July 1992, Vol. 9, No. 1.*

REGIONAL NEWS

ARIZONA ADJUDICATION MOVES FORWARD

PHOENIX—The "sheer multitude of the parties" involved in a statewide adjudication of the Arizona water rights makes the monumental case so significant as to warrant some special considerations, wrote Chief Justice Stanley Feldman as the Arizona Supreme Court approved procedures for filing and notifying nearly a million landowners involved in water rights claims. Notification of involved parties was an issue in itself within the massive consolidation of water rights in the upper Salt, Verde, Gila, Agua Fria, Upper Santa Cruz, and San Pedro watersheds.

The opinion by the state's high court that due process was served in notifying some 949,000 property owners paves the way for the adjudication process to move forward.

"The combination of postal and publication notice of the initiation of the adjudication satisfied the requirements of due process," the court found.

Reprinted with permission from U.S. Water News, *June 1992, Vol. 8, No. 12.*

Due to the tight budget situation facing state government, we are reviewing our mailing list to make sure that only those who want to continue receiving *Water Lines* will remain on the list. If you want to continue receiving this newsletter, please fill out, clip, and send us the following form. Also, so that we can continue to improve *Water Lines*, your responses to the questions below would be helpful and appreciated. We must receive your form by **September 15, 1992.** (You may also call editor Nancy Andersen at 444-6603 and give her the information over the phone, or you may fax your response to 444-0533.)

1. I want to continue receiving the *Water Lines* newsletter. ☐ Yes ☐ No
2. What issues would you like to see addressed in future articles?

   1)_____ 2)_____ 3)_____
3. Would you be interested in contributing an article for publication? ☐ Yes ☐ No
4. What sections could we add or omit to make the newsletter better?

   1)_____ 2)_____ 3)_____
5. Any other comments or suggestions?

   _____
6. If your name and address are incorrect on the mailing label, please make the necessary corrections.

KIM OVERCAST—DNRC'S PROCESSING UNIT SUPERVISOR

Kim Overcast's desk was piled high with notes and files. During the 30 minutes she talked to *Water Lines* editor Nancy Andersen, her phone rang several times and she answered technical questions without hesitation.

She pointed to a 12-inch stack of files. "I'll go through those in the morning, which should take about four hours. Before we streamlined procedures, it would have taken me at least 12 hours—I think that's progress."

Progress, consistency, and immediate support to the "front-line" staff are Kim Overcast's chief goals for the Water Resources Division's water right processing unit.

The processing unit is responsible for reviewing approximately 3,000 applications each year and issuing authorizations for all new water use in Montana. Kim supervises a staff of four that makes sure all water use applications are handled consistently and fairly, and that all permitted uses meet Montana's many legal mandates.

Kim took over the processing unit a little more than two years ago. After closely examining its operations at the time, she reevaluated the unit's mission and goals.

"I worked for 12 years in Havre's regional office and know first-hand the frustrations felt by the staff in those remote offices, and by the public," Overcast said.

"My experience gives me the unique perspective to balance the Division's central office needs with the practical policy application in the field."

Under Kim's direction, the jobs of her staff have evolved to include application coordination and review. Because these employees receive the same training as the regional office employees, they now serve as a check-point for water use application content.

"The processing unit staff does much more than make sure the blanks are filled in," Kim said. "They study the applications to make sure they're handled consistently throughout the state and to confirm that their contents are reasonable. If they have questions, they call a regional office immediately to clarify the application."

Education also plays a key role in Kim's job duties. She coordinates regular training workshops for the staff of DNRC's nine regional offices. According to Kim, this training has empowered regional office and processing unit staff to make informed decisions and ensure consistent service from eastern Montana to the state's western border.

Kim emphasizes that this consistency is a key factor in allowing DNRC staff to serve the public more efficiently and to properly manage the state's water.

"I've put my college training in the education field to good use here," she said. "That training has been very useful in conducting these workshops—I just feel that we all do a better job when we have a clear understanding of the laws and procedures."

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WATER LINES

NEWS FROM THE WATER RESOURCES DIVISION
DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION • JANUARY 1993

DEPARTMENT NEWS

GOVERNOR STEPHENS DEDICATES MIDDLE CREEK PROJECT

Governor Stan Stephens served as keynote speaker at a ceremony held in October to dedicate the recently completed Middle Creek Dam project. On October 9 at 2 P.M., nearly 60 people attended the dedication ceremony that concluded the final chapter of the Middle Creek Dam/Hyalite Reservoir story. Through the cooperation and perseverance of many people, the $5.2 million rehabilitation and enlargement project has produced a dam that meets today's safety standards. Other improvements include an enlarged recreation area with a new campground and day-use area. The project also provides additional water for the city of Bozeman. Water storage has increased from 8,267 to 10,184 acre-feet.

DNRC Director Karen Barclay Fagg welcomes guests at dedication ceremony.

Other ceremony speakers included Karen Barclay Fagg, Director, Department of Natural Resources and Conservation (DNRC); Dick Boylan, President, Middle Creek Water Users Association; Nancy Halstrom, Resource Assistant, U.S. Forest Service; and Neil Stessman, Regional Director, U.S. Bureau of Reclamation. Governor Stephens also offered special recognition to DNRC employees Bob Clark and Glen McDonald for the key roles they played in making the project become a reality.

Attending the ceremony were representatives from the Middle Creek Water Users Association, U.S. Bureau of Reclamation, U.S. Forest Service, HKM Associates, U.S. Bureau of Land Management, City of Bozeman, DNRC, and Ames Construction, along with members of the general public.

The newly rehabilitated and enlarged Middle Creek Dam.

RANCH-TO-POWER WATER SWAP IN WORKS IN WYOMING

One of the first agricultural-industrial water rights swaps in Wyoming history is shaping up as a multi-million-dollar deal, at least if the transaction receives necessary state approvals. PacifiCorp, which operates the Dave Johnston Power Plant east of Casper, has signed a contract with the Cannon Land and Livestock Co. for the ranch's direct-flow water rights to 3,037 acre-feet a year from the North Platte River.

Cannon and PacifiCorp have not disclosed the price of the proposed water sale, allowed under state law in what is called a "change in use" application. Various estimates, however, have placed the value of the swap at up to $9 million. At a price of at least $1,000 an acre-foot, more conservative estimates set the total value of the transaction at $3 million.

According to PacifiCorp, additional water rights are needed to assure that the Dave Johnson plant maintains existing power production levels. Over the past several years, power production has been subject to periodic releases from the Alcova and Pathfinder reservoirs located upstream on the North Platte River. The water right of the Cannon ranch has a priority date of July 1904, which is senior to the huge Pathfinder water right of Dec. 6, 1904. According to a Cannon spokesman, formerly irrigated land on the ranch would be returned to grass and cattle grazing.

There is, however, a hitch to the deal. The direct flow right of the ranch allows diversion from about May through August of each year, but the power plant wants to use the water primarily from October through April. To get around the problem, the ranch and power company have proposed to the state that the plant could use reservoir water during the winter, then replace that usage with the Cannon right during the summer months. The decision is up to State Engineer Jeff Fassett.

Although downstream irrigators in Wyoming and Nebraska have expressed concern over the deal, no formal protests have been forthcoming. However, the State of Nebraska, which already was in argument with Wyoming over use of the North Platte, has made clear its opposition. Nebraska State Engineer Michael Jess has stated the rights swap "would violate provisions of the existing Nebraska v. Wyoming decree," and would further complicate management of the North Platte.

Reprinted with permission from U.S. Water News, November 1992, Vol. 9, No. 5.

LORENTS GROSFIELD

When people talk about water management in Montana, they often mention Lorents Grosfield. A state senator who has ranched in the Big Timber area for almost 20 years, Grosfield keeps busy with numerous water-related activities.

During the 1991 legislative session, he served on the Judiciary, Fish and Game, and Water Policy committees. Grosfield is the State Water Plan Advisory Council's present chairman and has been appointed to the Montana Reserved Water Rights Compact Commission to serve on several negotiating teams. Past memberships include terms on the Board of Natural Resources and Conservation and the Water Development Advisory Council.

Grosfield also has been involved with his local conservation district. He served as a supervisor from 1978 to 1990 and as chairman in 1988. A graduate of Colorado State University with a bachelor's degree in Business Administration, Grosfield also served with the U.S. Army in Vietnam for one year.

The people of Montana are fortunate to benefit from the experience and dedication that Lorents Grosfield brings to a wide variety of water management issues.

MILK RIVER MANAGEMENT VITAL

Water is the lifeblood of the Milk River valley's economy. Without it, there are no crops, feed for livestock, income to farmers and ranchers, or income to the banks and merchants they support.

If it weren't for the river, there wouldn't be much fish, game, or just plain "green" in the valley either. The river's a vital part of the quality of life.

Unfortunately, water has been short more often than not in recent years, and if all the legal rights were used there might not be enough even in wet years.

Milk River water, and who has the right to use how much, has been a source of controversy for many years. Irrigators, municipalities, the Bureau of Reclamation, the Indian tribes, and Canada all have legal rights to it. Canada's rights were settled by treaty in 1909. The Montana Water Court is quantifying the water rights of public and private irrigation projects and municipalities.

The reserved water rights associated with the Blackfeet, Rocky Boy's, and Fort Belknap reservations are the final pieces of the puzzle. There is no doubt that these reserved water rights exist. The question is: How much water is each of the tribes entitled to? In fact, the basic concept of reserved water rights for the entire United States, the "Winters Doctrine," was developed from a U.S. Supreme Court case involving water use by the Fort Belknap tribes.

Quantifying these water rights can be done in two ways: through a mutually agreeable compact between the state and each tribe, or through the courts. The legislature created the Montana Reserved Water Rights Compact Commission in 1979 to seek compacts with the tribes and federal government over the extent of their reserved water rights.

Compacts are preferable because they avoid the expense and hard feelings that result from litigation. When matters are addressed by the courts, someone wins and someone loses. Compacts can result in all parties gaining something.

A tremendous amount of plumbing has been done over the years to import, store, divert, and distribute water for use in the Milk River valley, yet that plumbing may need a major overhaul, and additional water may be needed if there is to be enough water for everyone in the basin.

This is going to be expensive, costing perhaps hundreds of millions of dollars. No single group has the ability to fund this kind of development. The only chance is for everyone to work together—irrigators, Indian tribes, state and federal agencies, fish and wildlife interests, local governments, and Main Street businesses. Even a little disagreement within these ranks could jeopardize success.

Recognizing this situation, direct talks have begun among the tribes (directly with the Rocky Boy's and Fort Belknap—the Blackfeet are observing at this time), the state, federal agencies, and irrigators about working together on a comprehensive plan for addressing all the water needs in the basin. Each of these groups is bringing its technical resources and interests to the table and recognizing and respecting the rights and concerns of the others.

Several committees have been formed. The Milk River Basin Advisory Committee is a broad-based citizens group consisting primarily of basin residents. The committee is monitoring progress on the technical aspects of the plan and will provide the final test as to whether the people of the basin support the plan.

The Milk River Intergovernmental Coordinating Committee was formed, consisting of high-level representatives of the tribes, irrigation districts, and state and federal governments to ensure that the technical resources of the agencies were brought to bear and that the Milk River was given a high priority. The tribes prefer this forum for presenting their interests and concerns on a "government-to-government" basis.

Technical work groups have also been formed to perform the following specific assignments: (1) quantify the total extent of tribal and non-tribal water needs; (2) evaluate water supply augmentation options; and (3) identify potential environmental opportunities.

This process has just begun, but it will be critical to the future of north-central Montana. If you are interested in finding out more about what you can do to support this effort, talk to representatives of your local irrigation district, tribal council, the Havre or Glasgow water resources regional office of the Department of Natural Resources and Conservation, or call me at DNRC in Helena at 444-6759.

Curt Martin is the planning section supervisor for the Montana Department of Natural Resources and Conservation.

GLOBAL WATERFRONT

MEXICO HOLDS OFF ON PLAN FOR DAM PROJECTS

MEXICO CITY—Apparently taking into account protests from environmentalists and archaeologists, the Mexican government has announced it will not build hydroelectric dams along the Usumacinta River for at least another two years. Opponents to the dams say the hydroelectric projects threaten Mexico's only remaining unpolluted river and the Lacandon rain forest.

Mexican officials continue to pursue feasibility studies of the dams, but have yet to even select a site for initial construction. The Usumacinta River forms an isolated stretch of border between Guatemala and Mexico, and recent easing of tensions between the two Latin American countries has also been a factor in planning for the dams. The two nations began studies for a huge joint dam project on the Usumacinta in 1980.

A series of dams along the river would be much more damaging than a single major project, environmentalists claim.

Reprinted with permission from U.S. Water News, *June 1992, Vol. 8, No. 12.*

REGIONAL NEWS

AWSE HOLDS CONFERENCE IN MONTANA

The Association of Western State Engineers (AWSE) held its 65th annual conference in Whitefish, Montana, September 22-24. The AWSE is made up of water officials responsible for administering water rights in 19 western states. A number of federal and other state representatives also attended the annual meeting.

According to Gary Fritz, Montana's representative and the AWSE's 1992 president, "These meetings are very helpful in forming a cohesive approach to water policy in the west."

The conference agenda included discussions on water education programs, defining the public interest, and importing and exporting water. State and federal representatives also shared information on policies and procedures within their individual agencies.

The AWSE adopted formal positions on the following issues:

- American Society of Civil Engineers' Model Water Code
- Dam Safety
- Funding of USGS Cooperative Program
- Ground Water Management
- Perpetuation of State Water Management Authority
- Wetlands

The meeting locations for the annual conferences are rotated among the 19 member states. The AWSE's 1993 conference will be held in Vancouver, Washington.

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DEPARTMENT NEWS

TONGUE RIVER DAM REPAIR/NORTHERN CHEYENNE WATER SETTLEMENT

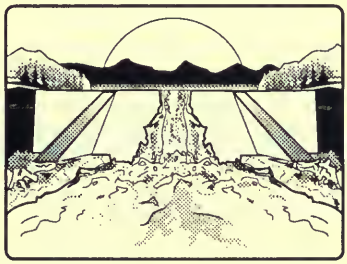
Background of the Project

The state-owned Tongue River Dam and Reservoir is an irrigation project located in southeastern Montana near Decker. The reservoir is also heavily used for fishing and flat water recreation. It was built in the late 1930s by the State Water Conservation Board with financial help from the federal Works Progress Administration. The dam is classified "high hazard" under Montana law due to the potential for loss of life downstream should the dam fail. It is also classified "unsafe" by the U.S. Army Corps of Engineers due to the inadequate spillway capacity. A failure at Tongue River Dam could not only kill people, but would also inflict between $300 and $500 million in property damages.

Since the late 1960s, the Department of Natural Resources (DNRC) has been studying the relocation, enlargement, repair, or rehabilitation of the Tongue River Dam. The moderate flood of 1978, which inflicted approximately $1 million of damage to the spillway, pointed out the immediacy of the need to rehabilitate the project. Now a way has been found to rehabilitate the dam and simultaneously settle the reserved water rights claim of one of the state's Indian tribes.

Provisions of the Agreement

The State of Montana and the Northern Cheyenne Tribe have agreed on a settlement of the tribe's reserved water rights. The resultant Northern Cheyenne-Montana Compact was ratified by the 52nd Montana Legislature (codified as §85-20-301, MCA, and hereafter referred to as "compact") and signed by the state and the tribe on June 11, 1991. Federal legislation to ratify the compact was introduced in the U.S. Congress in July 1991. On September 30, 1992, President Bush signed the Northern Cheyenne Indian Reserved Water Rights Settlement Act of 1992 (P.L. 102-374, hereafter referred to as "act"), which approves, ratifies,



and confirms the compact entered into by the Northern Cheyenne Tribe and the state. A provision in the act allowed the tribe to hold a referendum on the compact; the referendum was held on January 14, 1993, and the compact was affirmed. The act became effective January 15, 1993.

The purpose of both the compact and the act is to achieve a fair, equitable, and final settlement of all claims to federal reserved water rights in the State of Montana of the tribe and of the United States on behalf of the tribe. The act approves the water allocation to the tribe, as provided in the compact, of all the new water stored (up to 20,000 acre-feet per year) in the repaired and enlarged project. The act establishes a Tribal Development Fund and authorizes federal contributions to the fund. The act provides for administration of the compact and implementation of the act. Lastly, the act authorizes federal participation and funding to accomplish the repair and enlargement of the Tongue River Dam. Federal participation in this state-owned project is possible because of the trust responsibility of the federal government to the Northern Cheyenne Tribe.

Through the state's new partnership arrangement with the tribe, the state will also receive a no-interest loan from the tribe in the amount of $11,500,000. Without these arrangements and agreements, the state would still be searching for the means to repair and enlarge the unsafe Tongue River Dam.

Repair Plans

The repair and enlargement of the Tongue River Dam will be one of the largest infrastructure repair projects ever undertaken by the state.

The three major components of the project are:

- environmental compliance
- final project design
- construction

Actual construction of the project must be completed to a point that water can be made available to the tribe by December 31, 1997.

In conclusion, the Tongue River Dam project is a major water resources project for the State of Montana to undertake. It must be completed according to a very ambitious schedule and has received top priority from state government, the Montana Legislature, and Montana's congressional delegation.

DEPARTMENT NEWS

WATER RESOURCES DIVISION AND AMERICANS WITH DISABILITIES ACT

COMPLYING WITH THE ADA

In the 1960s, the Civil Rights Act prohibited discrimination on the basis of race, color, sex, national origin, age, or religion. Now, the Americans with Disabilities Act (ADA) extends the same civil rights protection to people with disabilities. Title I of the ADA makes job discrimination on the basis of a disability illegal for both public and private employers. Title II of the ADA addresses discrimination in the provision of state and local government services. This means we must ensure that individuals with disabilities have equal access to our services, benefits, programs, and activities.

The Water Resources Division is committed to accommodating people with disabilities. Our basic guideline for complying with the ADA is to do, within reason, whatever we can to provide our services and programs to people with disabilities. Some of our efforts are described below.

- People with disabilities will not be excluded because of inaccessible offices. Many of our regional office facilities will be remodeled to comply with the ADA. In addition, if one of our offices is not accessible to a person with a disability, we will arrange to meet that person in an accessible location to conduct the business. If you need any such accommodation, please contact the individual office that is involved.
- To ensure that people with disabilities have access to our programs, division staff will choose carefully when selecting buildings for public meetings and hearings throughout the state. Whenever possible, we will find facilities for public meetings and hearings that are accessible to persons with handicaps.
- Division staff have been instructed to assist people with disabilities as needed. We will gladly help operate machinery, such as reader-printers, or read information from our printed materials to individuals with impaired vision. Division staff will make every attempt to comply with any reasonable request for necessary assistance.
- DNRC has installed a telecommunications display device (TDD) in the Helena central office (444-6873).

REGIONAL NEWS

IRRIGATION EXPANDS IN NEBRASKA

GRAND ISLAND, Nebraska — Although a final count won't be known until after the end of the year, 1992 is shaping up as the busiest well-drilling year for Nebraska irrigation in over a decade. Through the first nine months of 1992, the state had registered 949 irrigation wells, 38 more than were registered during all of 1991.

Some of the increase represents existing wells that had not been previously registered, Nebraska officials pointed out, but the large number of new wells primarily is indicative of an extended drought cycle. "The last three years were pretty dry years, so they've been going in and sinking an extra well for supplemental water or expanded irrigation," noted Rich Bishop, general manager of the Central Platte Natural Resources District in Grand Island. Even then, Bishop admitted he was surprised that 1992 was shaping up as the biggest year for irrigation well registrations since 1981.

Although still below levels of the irrigation boom years of the mid-1970s, registrations have hovered around a thousand over the past three years. Drilling of irrigation wells in Nebraska generally bottomed out during the mid-1980s. Cash prices for livestock and corn have held up well enough in recent years for farmers to afford investing in new wells.

However, Bishop said he expected irrigation well drilling to level off in the Grand Island area because up to 85 percent of farmland acres that are suited for irrigation have already been developed.

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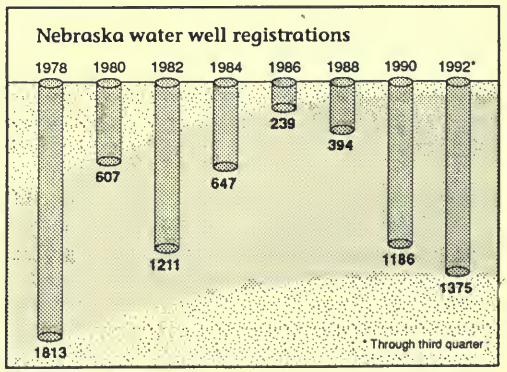
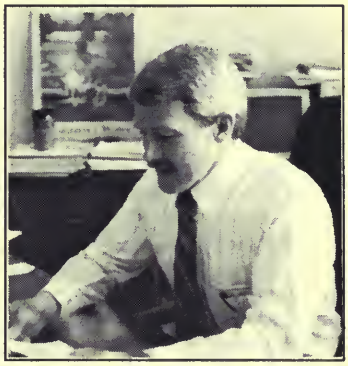


SOURCE: Nebraska Division of Water Resources

PEOPLE IN WATER

GOVERNOR RACICOT SELECTS DNRC DIRECTOR



Mark Simonich was appointed in January by Governor Marc Racicot as the new director of the Department of Natural Resources and Conservation. Mark is 38 years old and graduated from high school and college in Utah.

He used his B.S. degree in forestry at various lumber companies throughout Montana and eastern Idaho, including St. Regis Paper Company, Brand S Lumber, and F. H. Stoltze Land and Lumber Company.

Most recently, from 1989 to 1992, Mark was employed as a legislative assistant to Senator Conrad Burns in Washington, D.C. His duties there included covering all natural resource, public lands, and environmental issues for the senator.

Mark's wife, Sandra Ann, is from Libby, Montana. They have two children—Melissa and Daniel.

DEPARTMENT NEWS

BEAVERHEAD COUNTY GROUNDWATER STUDY

The Beaverhead County Groundwater Study was initiated in July 1991 to investigate chronic water shortages in the Blacktail and Rattlesnake Creek drainages of the Beaverhead basin. Scheduled for completion in December 1995, this project is a joint effort of DNRC, the U.S. Bureau of Reclamation, the Montana Power Company, and the East Bench Irrigation Company of Dillon.

In April 1991, the Montana Legislature established a partial basin closure in the Beaverhead basin until June 30, 1996, which mandated a study to determine the impacts of groundwater appropriation. The study is evaluating how continued groundwater development will affect surface water availability and the area's groundwater productivity. The results of the investigation will benefit all water users in the area and will allow for better water management decisions in the future.

Groundwater levels are presently being monitored in various domestic, stock, and irrigation wells. Approximately 35 new monitoring wells will be drilled to observe long-term groundwater levels, study the aquifers' hydraulic properties, and collect groundwater samples for chemical analyses.

Project researchers will also:

- Construct or recondition streamflow monitoring stations on Blacktail Creek, Rattlesnake Creek, and the Beaverhead River near Dillon by spring 1993
- Conduct "seepage runs" along sections of major tributaries to the Beaverhead River to quantify seasonal streamflow
- Quantify the hydraulic properties of sediments along the Beaverhead River
- Collect groundwater samples from selected wells to conduct age-dating and geochemical analyses
- Conduct aquifer testing at approximately six irrigation wells to determine aquifer hydraulic properties
- Construct a computer model to evaluate the area's water budget and potential for impacts to the hydrologic system

The Beaverhead basin has been the focus of chronic disputes between existing water-right holders and proposers of groundwater developments. As new groundwater developments are proposed, the agricultural community has become increasingly vigilant and concerned about the area's groundwater production and potential for impact to surface water.

Like many areas of Montana, this area has experienced several years of low precipitation. Some speculate that the drought and high-capacity groundwater withdrawals from the Rattlesnake and Blacktail Creek aquifers are causes of the diminished streamflow in the Beaverhead River. This diminished streamflow has restricted irrigation diversions and required larger releases from the nearly depleted Clark Canyon Reservoir to satisfy downstream uses. Many area citizens fear that additional groundwater development will worsen the situation.

Potential impacts to surface water and groundwater cannot be prevented or mitigated without the information that will result from this study. This groundwater project will provide a detailed, technical framework on which future water management strategies can be based. It will also ensure that present and future groundwater development is consistent with the production capability of the aquifers without adversely affecting water rights dependent on base flow contributions to the Beaverhead River system. This investigation will more definitively determine the quantity and quality of the groundwater resource and define its controlling hydrogeological processes.

DANUBE DAMS CAUSE A STIR IN TENSE EASTERN EUROPE

GENEVA, Switzerland — Just as the European Community has granted $134,200 in emergency funding to repair a dam in Yugoslavia that potentially could spill toxic waste into the Danube River, an international debate continues over a new dam project within the Danube basin.

Eroded by heavy rains, the 700-yard long earthen dam in the Montenegrin Mountains of Yugoslavia presents an "extremely dangerous" situation, according to a United Nations official. The dam holds back some 4.6 million cubic yards of waste from abandoned lead and zinc mines in the area. If the dam were to collapse, thousands of Yugoslavs would be without drinking water, and the toxics could ultimately drain into the main stem of the Danube. While Yugoslav officials generally downplayed the danger, virtually everyone was in agreement that the dam demanded immediate attention.

In nearby Czechoslovakia, an international debate continues over placing into operation the Gabcikovo Dam, one of the last great Communist infrastructure projects to control the flood-prone Danube. The dam and its concrete channel stretches southeast of Bratislava, the Slovak capital, toward Hungary's capital of Budapest. Although innocuous on the surface, the project would slightly alter the path of the Danube, which forms the border between Slovakia and Hungary. Such alterations are cause for war in these tense times.

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WATER LINES

NEWS FROM THE WATER RESOURCES DIVISION
DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION • JUNE 1994

DEPARTMENT NEWS

NEW MAPPING TESTED IN HELENA WATER RESOURCES REGIONAL OFFICE

Geographic Information System (GIS) is a computerized method of providing geographical data in a visual, map-like format. Many states, counties, and local governments are beginning to use GIS computer programs to manage and display geographical data.

The Helena Water Resource Regional Office recently initiated a pilot GIS project to convert its water rights maps to digital format. The new digital maps will be combined with the office's existing water rights database.

Eventually, the GIS data will be used to speed both water right claim processing and the extensive detailed analysis used in Montana's statewide water rights adjudication process. This system can also be used to speed answers to public inquiries into water right records and well logs.

While GIS systems are generally far-reaching and large in scope, this pilot project has been limited to the Three-Mile Creek basin near Ovando. DNRC staff will determine the effort needed to convert the adjudication mapping process into a GIS format and then evaluate if the system will present the data in a more user-friendly format and reduce their workload. Jim Gilman, water resources specialist in the Helena regional office, is spearheading the pilot project.

Much of the GIS work is patterned after a similar project recently completed for the Milk River basin by the Reserved Water Rights Compact Commission.

PRESERVING MONTANA'S GROUNDWATER IS WATER PLANNING'S FOCUS

During the 1992-93 state water planning process, public comment and committee discussions pointed out a need to look at how we can preserve the uses and quality of Montana's groundwater. Based on that recommendation, the Departments of Health and Environmental Sciences and Natural Resources and Conservation brought together representatives from: Montana State University, Montana Water Resources Association, Montana Rural Water Systems, Montana Salinity Control Association, Montana Power Company, Northern Plains Resource Council, Montana Association of Conservation Districts, Montana Environmental Information Center, Montana Water Well Drillers Association, and legislators as well as local, state, and federal agencies with groundwater responsibilities to write a state groundwater plan.

This groundwater planning committee has adopted a goal and purpose to clarify their task. The goal is *"To protect and improve Montana's groundwater resources in order to sustain current and future uses that are in the public interest."* The purpose is *"To recommend a set of actions to improve public and private management of Montana's groundwater."* The committee formed subcommittees to focus its time and energy in three main areas of groundwater management: 1) protection, 2) remediation, and 3) education.

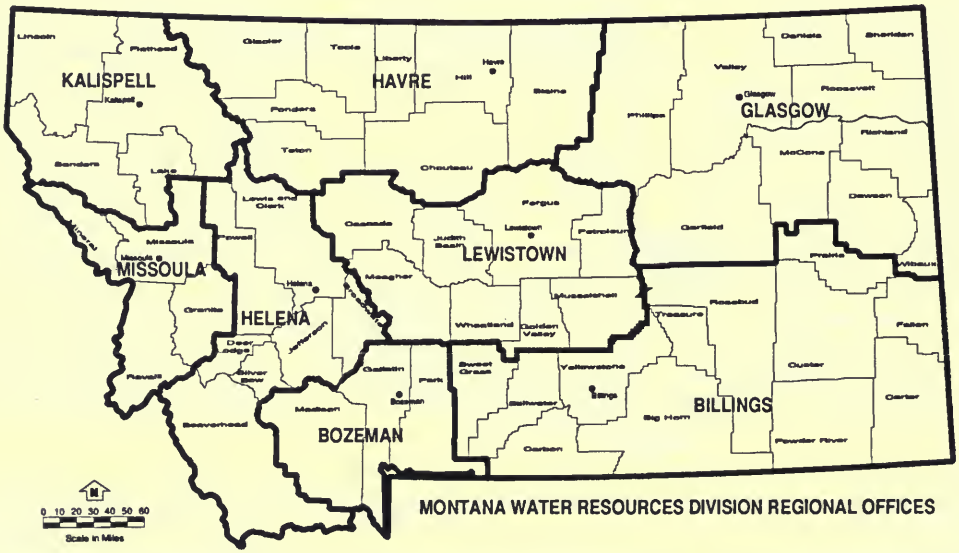
You may become actively involved in forming Montana groundwater policy and plans in four ways. First, contact a committee member (list available by calling phone number below) with your groundwater concerns or creative ideas to resolve problems or protect groundwater. Second, attend committee meetings. Committee meetings are scheduled for July 21, and August 11 at various locations. (Meeting details available by calling phone number below). Third, attend open houses and public hearings to discuss your thoughts on specific parts of the plan as it is being written. Look for those meeting announcements in September and October. Fourth, request to be placed on the mailing list for draft plans and then submit written comments. Citizen input is highly valued and seriously considered when developing state water plans. If you would like to take part please contact Judy Gruber, Department of Natural Resources and Conservation, 1520 E. Sixth Avenue, P.O. Box 202301, Helena, 59620, or phone 444-4247.

BILLINGS WATER RESOURCES OFFICE COVERAGE AREA EXPANDED

After analyzing workloads in the Water Resources Division's nine regional offices, DNRC Director Mark Simonich agreed to close the Water Resources Regional Office in Miles City. The office was closed February 18. Six of the seven counties previously served by the Miles City office — Carter, Custer, Fallon, Powder River, Prairie and Rosebud Counties — will now be served by the Billings Water Resources Regional Office at 1537 Ave. D, Suite 121. Wibaux County will join the Glasgow Regional Office at 839 1st Ave. South.

In an effort to assist people in southeastern Montana, DNRC has made microfilm indexes of all area water rights. These are available for public use at each County Clerk and Recorder Office. Also, for personal on-site assistance, staff from the Billings Water Resources Office is available by request.

The Billings Regional Office will continue to provide water resources assistance to south-central Montana phone the Billings Water Resources Regional Office at 657-2105, toll-free 1-800-370-7567 or Fax 245-2064. The phone number of the Glasgow office is 228-2561.



MONTANA WATER RESOURCES DIVISION REGIONAL OFFICES

REGIONAL NEWS

ROCKY MOUNTAIN GROUNDWATER CONFERENCE SCHEDULED SEPT. 26-28 IN LAS VEGAS

Nevada Test Site and Yucca Mountain field trips highlight activities on Monday, Sept. 26. Groundwater will be discussed by officials, engineers, and environmental & regulatory experts from Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming on Tuesday. Wednesday's discussion topics include mining and groundwater, changing water use and water rights laws, the role of private consultants in federal and

state programs, and groundwater models in regulatory and management settings.

The conference costs $125, which includes the field trip, a social hour, and three lunches. The room rate is $64 at the Rio Suite Hotel & Casino. For registration information contact Dr. Paul Seaber at the Desert Research Institute, P.O. Box 19040, Las Vegas, NV 89132-0040. Phone (702)895-0487 before Aug.1.

DEPARTMENT NEWS

LEWISTOWN DITCH TRANSFER UPDATE

The Lewistown Ditch transfer was completed April 28, 1994 when the Board of Natural Resources and Conservation approved transferring ownership to the water users association. The Lewistown Ditch Company took over ownership after the Association President Lawrence Jenni, Department of Natural Resources Director Mark Simonich, and Board of Natural Resources and Conservation Chairman Jack Galt signed the Quit Claim Deed and Agreement to Transfer.

During the 1991 and 1993 Montana legislative sessions, the Lewistown Ditch was one of 12 state-owned water conservation projects that came under legislative directive for ownership transfer. The Legislature mandated the Department of Natural Resources and Conservation projects be transferred to local water user associations in order to reduce state government workload and give more control and responsibility to local water users who realize the primary benefit of the projects.

The Lewistown transfer process took five months of negotiations between DNRC and the Lewistown Ditch Company. Two other projects, Park Branch and Columbus Ditch, are reaching the final stages and should be completed sometime this summer.

All 12 associations submitted petitions and have begun negotiating final transfer proposals. Draft plans on the other projects have been prepared and submitted to all water users.

The issues being addressed through negotiations include liability concerns, technical expertise, properly filed easement, water rights appraisal, and existing contract balances.

PEOPLE IN WATER

TIM KUEHN SPEARHEADS PROJECT TRANSFERS

Tim Kuehn, a project specialist in the Water Resources Division's State Water Projects Bureau has been the liaison on project transfers between the water users and the DNRC. Tim began his job as project specialist in September 1993, and currently works exclusively with project transfers. Prior to that Tim was a water resource specialist for seven years in the division's Billings Regional Office. He brought to this position a thorough knowledge of water practices, water rights, and the ability to work effectively with water users. Tim also works as a liaison between other state-owned projects and the department. He assists in the hydrography program and provides assistance in the protection of Montana's water rights.

Photo by Jim Bond

Tim Kuehn, Project Transfer Specialist

As project specialist Tim hopes to "meet the legislative mandates and transfer all projects by June of 1995 with terms that are acceptable to both the DNRC and the water users association."

Tim finds his new position both challenging and interesting. "What is unique about my position, is the public consensus has been a cry from the people for less government. Programs like mine are new to state government. We are the ground-breaking step in satisfying the attitude for less government and more privatization," he said.

BRITISH COLUMBIA DEBATES EXPORT SAFEGUARDS UNDER NAFTA

Victoria, British Columbia — Before the North American Free Trade Agreement NAFTA was even a gleam in the eye of former President George Bush, British Columbians were fearful of uncontrolled water exports. So a debate over provincial water controls is considered a natural sequel to passage of NAFTA.

British Columbia Employment Minister Glen Clark is an outspoken proponent of such protective laws. "The people of British Columbia own the water," Clark said. "We believe we have the sovereign right as a people to control access to that resource." Despite assurances by U.S. and Mexican officials that Canada's water resources aren't included in NAFTA, Clark believes that once water enters a pipeline or is loaded on a tanker truck it can qualify as a good under the trade agreement and could be exported with no restrictions.

Fears of Canada losing control of its water resources have been compounded by recent revelations of unregulated sales to the U.S. from the Columbia River system. These ad hoc sales were formalized last August by a 10-year agreement between British Columbia Hydro and the Bonneville Power Administration in which the U.S. agency can "swap" hydropower for water. One such sale reportedly involved some 2.5 million acre feet of water from Mica Reservoir in British Columbia.

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MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION • OCTOBER 1994

MISSION: TO PROVIDE THE MOST BENEFIT, THROUGH THE BEST USE, OF THE STATE'S WATER RESOURCES FOR THE PEOPLE OF MONTANA

STATE DOCUMENTS COLLECTION

DEPARTMENT NEWS

PARK'S HOT WATER PROTECTED

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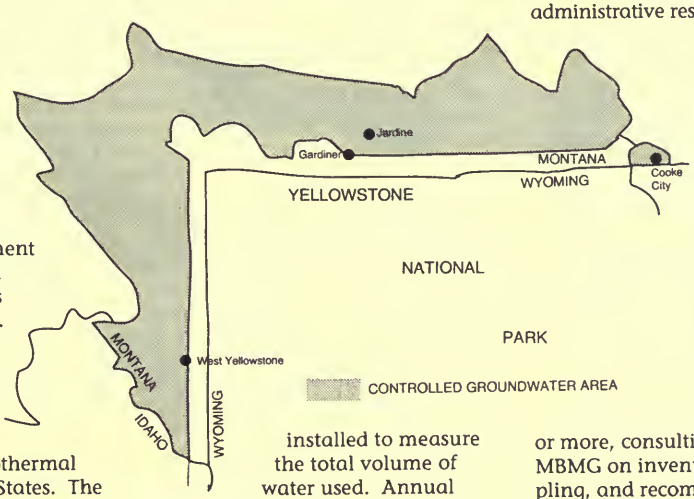
The State of Montana and the National Park Service negotiated a water rights compact which established the Yellowstone Controlled Groundwater Area. The compact became effective on January 31, 1994.

The Yellowstone Controlled Groundwater Area, which is located north and west of Yellowstone Park, was established to regulate groundwater development adjacent to the Park in an effort to preserve its hydrothermal features. These features are a unique and irreplaceable resource that represent one of the few undisturbed hydrothermal systems in the United States. The compact restricts groundwater development within this designated area.

The Yellowstone Controlled Groundwater Area restrictions apply only to groundwater appropriation within the designated area with a priority date on or after January 1, 1993. Anyone wanting to appropriate groundwater in this area after January 31, 1994, must apply for a permit with the DNRC. Depending on the rate and volume of groundwater needed, and the temperature of the groundwater at the wellhead, different restrictions apply. All applicants must provide a statement of whether or not the proposed water use requires water with a temperature of 60° Fahrenheit or more. All permits issued require that meters be installed to measure the total volume of water used. Annual water usage must be reported to the Montana Bureau of Mines and Geology (MBMG) in Butte. DNRC provides the meters necessary to gather this data.



The compact requires the DNRC to send the National Park Service (NPS) a copy of each permit application, including a map and well log. The NPS has 30 days to file an objection to the application and 60 days to file an objection to the well log report if they determine the proposed appropriation is hydrologically connected to groundwater specifically described in the compact. The DNRC is working closely with the NPS, MBMG, and the Montana Reserved Water Rights Compact Commission to fully implement the requirements of the compact and manage the daily administrative responsibilities.

The compact also establishes a technical oversight committee which is charged with reviewing scientific evidence related to the Yellowstone Controlled Groundwater Area, including analyzing applications to use water of 60°F or more, consulting with the MBMG on inventory and sampling, and recommending modification of boundaries and restrictions in the area. The committee consists of five members including a member each appointed by the NPS, MBMG, U.S Geological Survey,and DNRC; and one member who is selected at large by these four appointed members.

Anyone interested in additional information on the Yellowstone Controlled Groundwater Area can contact Ron Guse, (406)444-6630, Kirk Waren, (406)444-6679 in Helena or the Water Resources Division Regional Office in Bozeman, (406)586-3136.

FLATHEAD VALLEY GROUNDWATER STUDY

The Flathead Valley Groundwater Study was conceived in the spring of 1992 by Kalispell Water Resources Regional Office's resident hydrogeologist as a necessary technical phase in the on-going management of water resources in the Flathead valley.

"How many people and how much development can the Flathead valley support without water quantity or quality problems?"

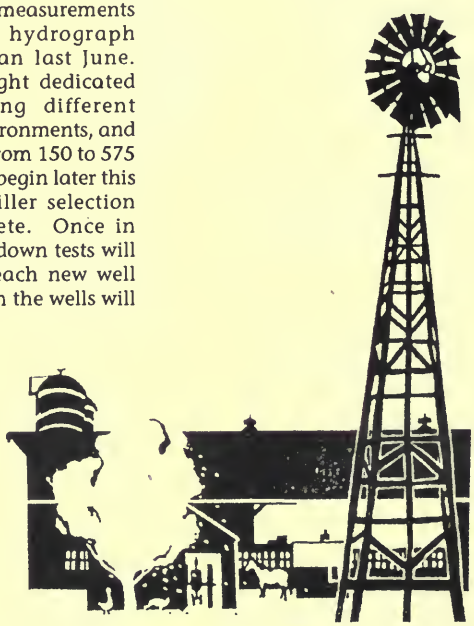
As proposed, the study addressed a major concern of numerous local groups and individuals who asked the question "how many people and how much development can the Flathead valley support without water quantity or quality problems?" The study proposed to gather and analyze technical data in the primary recharge of northern end of the valley. The project focuses on a monitoring well network capable of providing data needed for both aquifer characterization and flow modeling of the valley-fill comprising the area's "deep aquifer" system. This system is currently considered to be the primary groundwater source for new agricultural, industrial, municipal, and domestic water appropriations. The study was funded from state coal tax revenues through a grant awarded in the spring of 1993 from DNRC's Conservation and Resource Development Division.

The principle objective of the study is to establish a network of wills across the valley to collect groundwater data over a two year period. This data will expand current knowledge and understanding of hydrogeologic conditions associated with the valley's deep aquifer system. Specific tasks include reviewing logs of all wells within a 54-square-mile band across the valley, selecting existing domestic wells for groundwater monitoring, initiating of monthly groundwater level measurements in the selected wells, and installing and testing dedicated monitoring wells at specific locations within the established monitoring network. Sites for the wells were selected to provide the data needed to define vertical as well as horizontal flow within the deep valley-fill.

Review of well logs have been completed and a network consisting of 36 existing wells has been established. Monthly groundwater level measurements and individual hydrograph construction began last June. Installation of eight dedicated wells representing different hydrogeologic environments, and ranging in depth from 150 to 575 feet, will probably begin later this year after the driller selection process is complete. Once in place, pump drawdown tests will be conducted in each new well early in 1995. Then the wells will be added to the monitoring network to facilitate additional data collection. The data gathering and evaluation process is expected to continue until July or August, 1996, at which time initial interpretations of the study results will be summarized and reported.

The Flathead Valley Groundwater Study will not answer all of the questions or solve all of the groundwater problems in the Flathead basin. Hopefully it will provide initial data for developing a strong technically-based approach to groundwater management in the valley and help create a basis for development without adverse affects on a valuable and necessary resource — groundwater.

For more information on the Flathead Valley Groundwater Study, contact Water Resources Division Kalispel Regional Office at (406)752-2288.



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NEW FACES IN THE WATER RESOURCES DIVISION

Pictured (l. to r.) Tim Bryggman, Michael Downey, Joni Kittleson, Rami Richardson, Seth Brandenberger, Michele Lemieux, Mary Vandenbosch, Tom Sanburg. Not pictured Cody Mitchell

Seth Brandenberger is a native of Missoula, and graduated from the University of Montana in Geology. Seth works for the Water Operations Bureau as the Water Measurement Program Manager. He conducts research to identify chronically dewatered streams. Once a stream is designated as chronically dewatered, measuring and controlling devices are required on all diversions within two years. Seth is currently working on the Musselshell River.

Tim Bryggman graduated from Santa Clara University in California and is completing work on a Master's degree in Economics at the University of Montana. Tim is the economist for the Water Management Bureau. He is responsible for analyzing the economic aspects of issues pertaining to Montana's water resources. Tim is currently examining the U.S. Army Corps of Engineers' review of the Missouri River Master Manual.

Michael Downey came to Montana after finishing a Master's degree in Environmental Law at Vermont Law School. He received his Bachelors degree in English Literature from the University of Oregon. Michael works in the Water Management Bureau coordinating the Missouri River Reservation Program. This program allows municipalities and public agencies to reserve water for future use.

Joni Kittleson is a native of eastern Montana. She graduated from San Diego State University in California with a Bachelors degree in Liberal Studies. Joni provides administrative support to the Water Management Bureau and maintains the Water Resources Division Library.

Michele Lemieux originates from Salt Lake City, Utah. She has a Bachelors degree in Geological Engineering and a Masters degree in Civil Engineering from the University of Utah. Michele works in the dam safety section of Water Operations Bureau.

Cody Mitchell earned a B.S. degree from Montana State University as a Certified Engineering Technician. Cody is working for the State Water Projects Bureau as an Engineering Technician. He is involved with land use issues, surveying, water measurement, and water right research.

Rami Richardson came to Montana from Twin Falls, Idaho. She graduated from the College of Southern Idaho with an associate degree in Liberal Arts. Rami provides administrative support to Water Resources Administration and regional offices.

Tom Sanburg has a Bachelors degree in Geography and enjoys working with topics of natural science. He works as a processor/microfilm clerk for the Water Rights Bureau. Tom spends half of his time maintaining microfilm records and the other half processing new water right permits and authorizations.

Mary Vandenbosch is from Seattle, Washington. Mary has a Bachelors degree in Environmental Studies from Western Washington University and she attended graduate school in Minnesota where she earned an M.A. in Public Affairs. Mary is a planner for the Water Management Bureau. She is working on activities related to the state water plan and local watershed planning.

The Water Resources Division is pleased to welcome these new employees and looks forward to their contributions to the DNRC and the water users of Montana.

AUTUMN 1994 DROUGHT UPDATE

There has been relatively little relief from this summer's drought since April when a low snowpack and an early runoff alerted the state drought committee to a high probability of drought. Although precipitation levels were low, Montana's dryland agriculture received enough moisture to grow a relatively high quality grain crop. An abundance of warm temperatures and sunny days prompted an early ripening of the wheat and barley crops which were harvested just as soil moisture conditions deteriorated to conditions unsuitable for grain growth. Unfortunately, grasshoppers plagued hay growers and reduced the yields of pasture lands for livestock growers. As of September 6, topsoil moisture was rated by the Montana Agricultural Statistics Service as 90% short and 10% adequate. Second cutting of alfalfa hay was 94% complete, compared with 46% last year at this time. The average is 69%. Winter wheat was 99% harvested, compared to an average of 79% for this date, and spring wheat was 86% harvested, compared with an average of 51% for the same date.

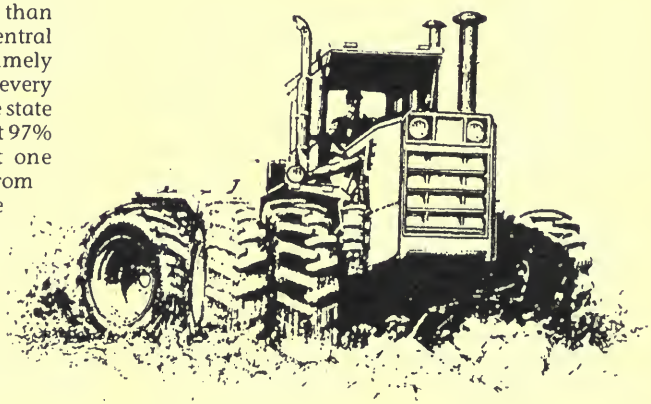
"Improvement of Big Hole flows are most likely the result of many irrigators sacrificing water they have a right to divert"

The northwest, southeast, and southwest regions of the state continue to be drier than normal with the northeast and northcentral regions receiving the best and most timely precipitation. Even in this drought year every one of the seven geographic regions of the state have at least one station reporting at least 97% of average precipitation and at least one station reporting below 68% of average from April 1 to date. For example, in the southcentral region, Big Timber reports 129% of average precipitation and Hardin 60% of average since April 1. In the southeast, Miles City reports 50% of average and Ekalaka 97% of average for the same period. In the southwest, Wisdom reports 106% of average and Lima 63% of average.

Of course, these regions are delineated on an arbitrary basis, and do not necessarily correspond with weather patterns which are very complex. The Upper Big Hole River was closed at the end of July due to streamflows in the 30% of average range. On August 30, the flow of the Big Hole at Wisdom was only 1.5 cfs.

State Drought Advisory Committee members and DNRC officials have been visiting with holders of major water rights and exploring opportunities to augment waterflow where streamflows were low enough to cause damage to fish. Many of the rivers have maintained significantly increased flows as a result of these collaborative efforts.

Precipitation may have contributed to the improvement of Clark Fork flows, but stabilization and improvement of Big Hole flows are most likely the result of many irrigators sacrificing water they have a right to divert. The City of Butte also reduced its diversion of Big Hole River flows for municipal use as a result of the replacement of an antiquated wooden conveyance system with steel pipelines and an aggressive water conservation program.



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REGIONAL NEWS

SOLAR ENERGY USED FOR STOCK WATER

THERMOPOLIS, Wyo. — A simple pole corral surrounding a series of southward-facing solar panels is rapidly replacing the windmill as a symbol of livestock watering out on the range in Wyoming. According to ranchers and utility officials, solar energy is becoming increasingly useful in developing backcountry stock wells as the technology becomes more efficient and affordable.

In many cases, solar well sites consisting of collector panels and a submersible pump are much cheaper than stringing a single electric supply line across miles of prairie. Ranchers like the cost-effectiveness of the solar units, which use a silicon crystal to covert sunlight to direct electricity, and rural electric associations actually prefer the alternative power supplies rather than the alternative of providing costly service lines to single, remote well locations.

The most common solar application for agriculture in Wyoming is pumping stock water, according to Guy Charles, manager of member services for the Hot Springs Rural Electric Association in Thermopolis. The phenomenon is directly related to the improvement in solar technology over the past decade or so, said Charles. Solar panels are guaranteed for 20 years, he pointed out, while submersible pumps might be warranted for only five years.

Unlike windmills, however, solar systems cannot pump water around the clock and are limited to operation only while the sun shines, Charles pointed out. A simple answer to the problem, he noted, is to increase the amount of tank storage capacity at each well site. "We've found it's easier to store water than it is to store electricity," Charles stated. "So if they (ranchers) increase the size of their storage tanks and start the pump before they put the stock on the pasture, then everything works just fine."

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GLOBAL WATERFRONT

Honduras turns to cloud-seeding for relief from drought

TEGUCIGALPA, Honduras — Faced with a prolonged drought that threatens to devastate the national economy, the Honduran government has turned to cloud-seeding. According to a Dutch Press Agency report, an unidentified U.S. company has been hired for $450,000 to aerially inject silver iodide dust into clouds blowing in from the Pacific Ocean. The drought crisis in Honduras has been worsening throughout this year, and unfortunately coincides with the onset of a new government. President Carlos Roberto Reina was elected last November on the promise that his government would improve the standard of living in this nation that is among the poorest in Central America. Besides reducing agricultural production, the drought has lowered the water level in the basin that feeds a 300-megawatt hydropower plant considered the most important power source in Honduras.

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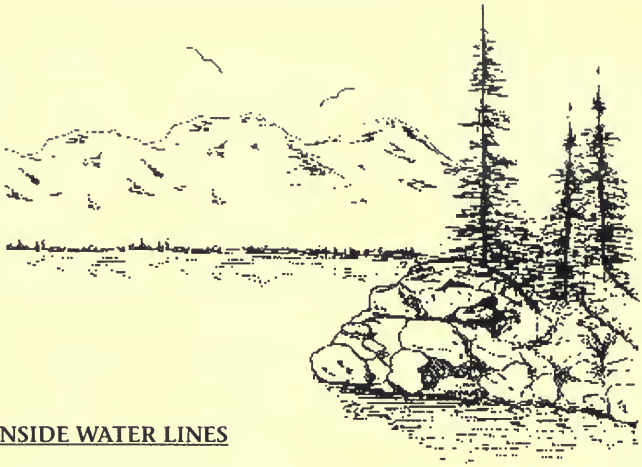

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DEPARTMENT NEWS

WATER MANAGEMENT TECHNIQUES ENHANCE EFFICIENCY IN THE MUSSELSHELL RIVER BASIN

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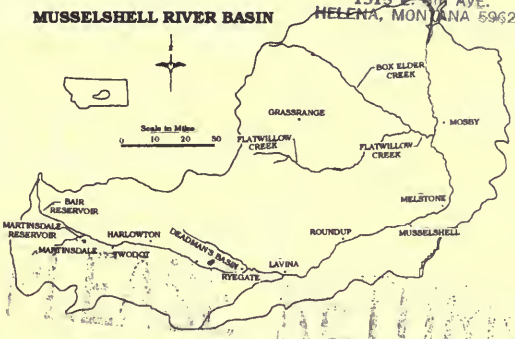
The Musselshell River Basin experienced a drier-than-normal irrigating season in 1994 which created a high demand for water in this water-short year. Additionally, irrigators enjoyed an unusually long growing season with some irrigators diverting water well into October. Oddly enough, Musselshell basin irrigators felt that everyone on the river, regardless of their location, had enough water to satisfy their needs.

This dry season allowed water users to gauge the success of the water management practices that have been implemented in this basin. That is, did the water management practices specifically implemented in this basin make any difference in the availability of water during this dry irrigating season?

Deadmans Basin Water Users Association's water management plan has enabled them to manage their water better than ever before. The association finished the irrigating season with 39,960 acre-feet of water left in storage. This represents 122% of the average reservoir content for the month of October. In short, the Association has almost enough water to satisfy their contracts for the 1995 season without any additional water being stored.



The association is eager to become even more efficient in the future by achieving better compliance with existing programs and implementing a few new management practices. With these changes, they can reasonably expect to provide a consistent supply of water throughout the basin, even during extended periods of drought. This translates into less conflict and better profits for the irrigators and a better supply of higher-quality water for the municipal and domestic users of the Musselshell River.

Additionally, water users below Mosby who regularly experience dewatered conditions didn't encounter such conditions during the 1994 season. Water users in this region indicated that at no time did the river stop flowing! Unfortunately the condition of the upper basin water situation is not as good as that of the lower basin. Several individual irrigators have increased their efficiency but there is no coordinated water management effort in this region of the basin. As a result, the current level of water storage of reservoirs in this region is between 50-70% of normal. With two consecutive dry years without good snow pack, the water users in the upper basin could face economic hardships.

In summary, the water management practices on the Musselshell have not only benefitted the water users who have implemented them, but also downstream water users. Also, water users who have not implemented such practices are now seeing the benefits of these programs.

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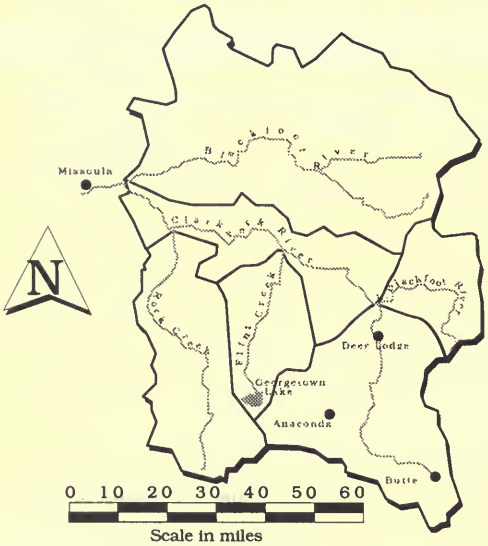
CRUNCH TIME FOR CLARK FORK PLAN



By year's end, the Upper Clark Fork planning process set in motion by the 1991 legislature is to be concluded. This has probably been the most "grassroots" and comprehensive effort at watershed planning Montana has ever seen.

In September, the Upper Clark Fork Steering Committee issued a draft management plan for the drainage area above Milltown Dam, including the Blackfoot River. This was the product of over three years of discussions within the steering committee, six watershed subcommittees, and over 70 public meetings. Four newsletters were published and distributed to every water-rights-holder in the basin.

Seven more public meetings were held throughout the basin in late September and early October to receive comments on the draft plan, and written comments were accepted until October 28. Most comments were favorable, although there was some concern over a couple of points.

The major recommendations of the draft plan were to close the basin to the issuance of new water use permits for surface and groundwater, with some limited exceptions. Also, the draft plan recommended a 10 year pilot program to allow people to change existing water rights to instream flow purposes with DNRC approval, regardless of who owns those rights or how they were acquired. The plan also recommended a continuing basin water planning and management steering committee.

In November and December the Steering Committee examined public comments and finalized the plan. Recommendations were made on nine issues ranging from basin closure, to water reservations, to protection of existing rights.

Limiting the development of new water rights (basin closure) from both surface and ground water is a major recommendation in the Final Plan. Ground water developments less than 35 gpm, up to 10 acre feet per year, are unaffected by the closure action. Other specific exemptions such as future appropriations utilizing storage and domestic use for ground water (including municipal use) are incorporated.

Expanded opportunities for the use of existing consumptive rights for instream flow was developed as one tool to improve instream flow conditions. The Final Plan includes a narrow version of the original program. Proposed is a 10 year pilot program which requires a study program, a 5 year evaluation of approved exchanges and several other protective or evaluation measures. Leasing is the only water right exchange method allowed.

The use and development of an on-going local basin water planning and management mechanism is called for in the Upper Clark Fork watershed. Census-based collaborative processes are advocated.

The most controversial recommendations include ground water in the closure and the Pilot Program for Instream Flow Leasing. Much of the disagreement over these elements was resolved during the last meeting, however complete consensus was not attained. The Final Plan will now go to the legislature, to the governor and through the State Water Planning Process. Major recommendations must be enacted by the legislature. We will have to wait and see if the developed consensus can be maintained.

BILLINGS WATER RESOURCES REGIONAL OFFICE

Dave Adair is a Civil Engineering Specialist and has been in the Billings regional office since 1991. He received his engineering degree from Montana State University. Dave is currently working on safety plans for state owned dams. He also inspects dams, designs water control structures and offers technical engineering support to the office and the public.

Pictured from left to right: Keith Kerbel, Pat Riley, Nikki Gunnels, Karla Bornhoft, Jan Langel, Marty Van Cleave, Dave Roberts, and Dave Adair.

Jan Langel has been a Water Resource Specialist with DNRC for five and a half years. Before coming to DNRC Jan was involved in farming and ranching. He graduated from Northern Montana College in 1987 with a Bachelors Degree in Business, emphasizing in agriculture. Jan's main task is adjudication of pre-1973 water rights. He also assists in other water right and water management issues.

Karla Bornhoft is a Program Assistant and has been with the Billings office for 13 years. She currently processes groundwater certificates and water right transfers for the Billings region. Her other duties include researching water right information and helping the public with water right questions. Prior to coming to DNRC, Karla served the State of Montana for seven years with Fish, Wildlife & Parks.

Nikki Gunnels provides administrative support to the Billings office. She has lived in Billings for 21 years and attended Rocky Mountain College and Eastern Montana College, where she received a Bachelors Degree in Business Administration with an option in Information Systems in 1992. Nikki assists people in filing forms correctly, conducts water right searches and performs other public service tasks. She also enters all incoming water rights forms into the database, identifies deficiencies on certain forms and standardizes them.

Keith Kerbel has been the Regional Manager of the Billings office for almost 14 years. Keith started with the Department in 1976 in the Powder River Adjudication program in Broadus. He also worked in the New Appropriations program in Miles City for three years. Keith grew up on a family farm in Sidney and finished high school in Billings. He graduated from the University of Montana in Natural Resources Conservation. Along with managing this office and all it's activities, Keith approves water right permit applications, investigates complaints and assists the public with water management issues and concerns.

Pat Riley is a Water Resource Specialist and has been in the Billings office since February. Prior to joining the Billings office, Pat served as a Water Resource Specialist in the Glasgow office; he has been with DNRC for 13 years. He currently serves as a team leader for the Billings adjudication staff. Pat graduated from Northern Montana College in Elementary Education.

Dave Roberts is a Water Resources Specialist focusing on the adjudication program and has been with DNRC for 11½ years. Dave was raised in Pennsylvania and graduated from Penn State with a degree in Agricultural Economics. He has also attended the University of Arizona and Ohio State taking classes in Agricultural Education.

Marty Van Cleave is a Water Resource Specialist and has been with the Billings regional office since 1989 where he assists the public with new applications for water use. Before joining the Billings office, Marty worked in the Miles City regional office for six years. He has a Bachelor of Science in Agricultural Production from Montana State University in Bozeman.

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KANSAS TRANSFER PROPOSED

If a proposal by the City of Hays proceeds as planned, the first "water ranch" would be established in Kansas as the initial water transfer conducted under the state's new transfer procedures. Water-short Hays intends to buy the 6,784-acre Circle K Ranch near Kinsley, Kansas, from a Colorado concern, and construct a 67-mile pipeline that would transfer some 5,468 acre feet of water to the city that would be yielded by 42 irrigation wills on the ranch. The water ranching proposal is facing fierce opposition from local residents near Kinsley, Kansas.

The ranch is within the jurisdiction of the Big Bend Groundwater Management District, which would have to approve the transfer. In addition, under the state's 1992 Water Transfer Act, the plan would need to be approved by a hearing panel convened by the state engineer. Under the Kansas law, any interbasin transfer of water over distances greater than 35 miles and involving more than 2,000 acre feet are subject to state review.

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HYDROPOWER PACT IS MADE

In the first negotiated settlement of its kind in the Northeast and only the second in the nation, an applicant for a federal hydropower license has reached an agreement with a coalition of environmental groups. In exchange for fish passage facilities and other environmental improvements at eight dams on a 65-mile stretch of the Deerfield River in western Massachusetts and southern Vermont, government agencies and the private groups have agreed not to oppose an application by the New England Power Co. to the Federal Energy Regulatory Commission (FERC) for new 40-year licenses to operate the hydropower dams.

Commitments made by the utility will enable important restoration of fisheries and river ecosystems in the Deerfield River, and will enable river enthusiasts to take advantage of significant recreational opportunities, said Margaret Bowman, director of hydropower programs for the conservation group American Rivers. "We hope this unprecedented agreement will shape the way FERC manages rivers impounded by dams through out the country," noted Bowman. "In this negotiation, conservation and recreation groups realized they had more to gain by working together than by focusing on their differences," she added.

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RUBY RIVER WATER USERS WORK FOR SOLUTIONS

A group of ranchers and recreational water users are working together to improve the management of water resources in the Ruby River valley. DNRC Director Mark Simonich appointed the Ruby River Reservoir Task Force in October 1994 after a fish kill occurred in the Ruby River below the reservoir.

On September 1, 1994 the reservoir was completely drained and water flowing through the reservoir washed a large amount of sediment into the river. The Department of Fish, Wildlife, and Parks (DFWP) estimated that 10,000 to 15,000 fish were killed. Most of the dead fish were rainbow trout that had been washed out of the reservoir.

Fourteen members serve on the task force, including representatives of the following interests:

- Irrigators with contracts to purchase water from the Ruby River Reservoir
- Irrigators with decreed water rights that pre-date the reservoir
- Recreational water users and recreation-based businesses
- Persons interested in protecting the fishery
- DNRC, which owns the dam.

Goals of the task force are to develop by March 31, 1995 the following:

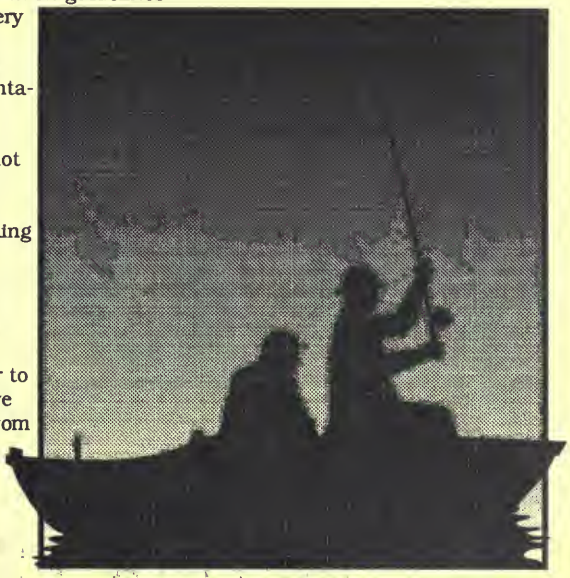
- Minimum reservoir pool size
- A river dewatering prevention plan
- Reservoir operation guidelines
- A water delivery plan
- A monitoring and implementation plan.

The group did not waste any time rolling up their sleeves and getting to work. On October 19, a group of Ruby valley ranchers and anglers worked together to help DFWP move rainbow trout from the Ruby River back into the reservoir.

In November, the task force developed a tentative plan for maintaining a minimum pool in the Ruby River Reservoir. The task force then began working on the dewatering prevention plan and the water delivery system.

Residents of the Ruby River valley have also been actively involved in the efforts of the task force. In addition to helping move the fish, residents have been attending and participating in task force meetings. Water users with decreed rights have organized to improve communication and have developed a proposed supplement to the dewatering prevention plan.

For more information on the Ruby River Task Force call Mary Vandenbosch at 444-6635.



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UPDATE ON WATER MEASUREMENT PROGRAM

The Water Measurement Program was established by the 1991 Legislature to encourage better management of our water resources by water users where chronic dewatering significantly impairs fisheries, agriculture, industrial, municipal, or recreational uses of the water. Under the program, the Department of Natural Resources and Conservation (DNRC) can require measuring and controlling devices for diversions on watercourses that are chronically dewatered. By requiring controlling and measuring devices on these diversions, the department can ensure that water users divert only the water to which they are entitled. These devices can also provide water users with an additional water management tool.

The first step in deciding whether or not to require controlling and measuring devices on a particular waterway is to hold public scoping meetings to gather local input. The DNRC water measurement specialist then researches the area and its history and produces a report which includes public comment and the department's decision. Although the water users are financially responsible for the measuring devices, some water user groups have applied for Renewable Resource Grants through the DNRC to finance purchase of the devices. If DNRC does require devices on a particular watercourse, the diversion owners or operators are required to install them within two years. The owners or operators are also required to periodically record and report water measurements to the department.

In 1993, DNRC asked interested individuals, organizations, and other agencies to compile a list of watercourses that might benefit from the installation of measuring and controlling devices. More than 150 suggested watercourses were screened and 10 were chosen as potential candidates for the program. Additional watercourse studies are planned as the program progresses.

Mill Creek in the Yellowstone Basin, One Horse Creek in the Bitterroot River Basin and Tenmile Creek in the Missouri River Basin have been evaluated by the Water Measurement Program. A final report for Mill Creek was written in 1993, and measuring and controlling devices were required for all diversions on the watercourse. Measuring devices on Mill Creek will protect a Department of Fish, Wildlife and Parks' water right lease and ensure higher instream flows to protect fisheries. Measuring devices were not required for One Horse Creek because the study showed that requiring them would not help water right holders or increase instream flows. Shortly after the initial scoping meeting for Tenmile Creek, the local water commissioner mandated measuring devices for all diversions and the study was discontinued. A draft study report recommending measuring devices for all Musselshell River diversions has been distributed for public review. Rock Creek in the Yellowstone River Basin and the Jefferson and Big Hole rivers are currently being evaluated.

For more info on the Water Resources Division Water Measurement Program call Seth Brandenberger at (406)444-6622.

NEWS FLASH

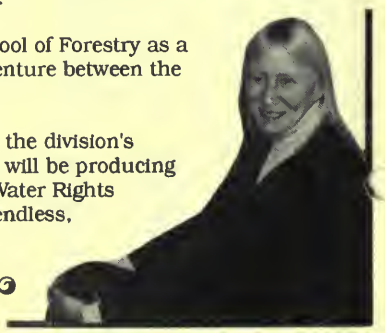
Water right forms are now available electronically through the State's computer bulletin board. Use your computer modem and dial 1-800-962-1729 or 444-5648 in Helena.

PEOPLE IN WATER

SONJA HOEGLUND IMPLEMENTS GIS PROGRAM FOR WATER RESOURCES

Sonja Hoeglund, a native of Culbertson, Montana, began working as the Water Resources Division's Geographic Information Systems (GIS) Specialist in mid-January, 1995. Sonja has a Bachelors Degree in Forestry and is completing work on a Master of Science Degree in Forestry specializing in GIS, at the University of Montana.

Most recently, Sonja worked at the University of Montana's School of Forestry as a research specialist working on a tax productivity project, a joint venture between the University and the Montana Department of Revenue.



As the Division's GIS Specialist, Sonja's first assignment is to work with the division's Planning Section on the Clark Fork Drainage Basin. Her second project will be producing a map of the Yellowstone Controlled Groundwater Closure Area for the Water Rights Bureau and the Bozeman Regional Office. The list of future projects is endless, and is matched by the potential benefit to Montana's water users!

We're happy to have Sonja on board and can't wait to use her expertise!

FARM GROUPS JOIN ENVIRONMENTALISTS IN IOWA WATERSHED PROJECT

DES MOINES, Iowa — In a cooperative move that might signal a new era of joint watershed management, environmental groups and agricultural interests have joined forces with a municipal water utility to improve the water supply of the Raccoon River in western Iowa. The effort involves establishing demonstration projects of soil and water management practices that could be applied on the 3½ million-acres of mostly farmland that makes up the Raccoon River watershed.

Spearheaded by the Iowa Natural Heritage Foundation and largely funded by the Northwest Area Foundation of St. Paul, Minn., the joint effort involves the Iowa Farm Bureau, Des Moines Water Works, Agribusiness Association of Iowa, and various farm commodity groups. The organizations will provide the services while the Northwest Area Foundation will put up $554,000 in funding for such demonstration projects as wetlands restoration and creation of grass buffer strips along streams, along with crop and feedlot management practices.

While the demonstration projects may not result in any immediately measurable improvement of the Raccoon River water supply, they nonetheless will serve as models for better management of the watershed, said Des Moines Water Works director L.D. McMullen. As the conservation practices become more popular, noted McMullen, some significant improvement may result in the quality of the river that supplies the drinking water needs of greater Des Moines.

McMullen noted that analyses of the river's water quality can actually indicate which herbicides and pesticides are popular with northwest Iowa farmers during a given growing season.

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SOUTHERN CALIFORNIA DROUGHT PLAN INCLUDES CONCEPT OF "TARGET MARKETING"

LOS ANGELES, Calif. — If drought conditions occur in southern California this year, there's likely to be more water trading going on than water rationing. Through a unique system of rewarding or penalizing its member agencies for their water use efficiency, the Metropolitan Water District of Southern California (MWD) has approved a drought management plan that seeks to avoid water rationing.

The drought plan, approved by the MWD board shortly before year end, sets base allocations for the district's 27 member agencies. The allocations are adjusted to reflect an individual agency's efforts to develop local water resources and to promote conservation. An agency that exceeds its allocation will either pay a penalty or seek out additional supplies from member agencies that don't use all of their allocations.

The purchase of unused allocations — which MWD is calling "target marketing" — was prohibited under the district's previous drought programs.

Target marketing was included in the plan in recognition of the need to minimize the impact of water shortages on the southern California region's economy, said Lester Snow, manager of the San Diego County Water Authority. Snow pointed out that San Diego County's local water supplies remain above average, allowing the authority to reduce purchases of imported water. This trend will likely continue through most of this year, he added.

The California Department of Water Resources has projected that allocations of the State's Water Project may total only 30 to 40 percent of requested amounts. Last year, allocations were half of that requested. A 30 percent allocation from the State Water Project, together with a full allocation from the Colorado River, would leave MWD about 10 percent short of the water it needs to meet anticipated demands. The district plans to make up the shortfall with water from other sources, including supplies stored in previous years for use during droughts.

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DEFORESTATION CREATES DROUGHT IN WETTEST SPOT OF THE WORLD

CHERRAPUNJI, India — Excessive rainfall, amounting to more that 500 inches last year, is both a "boon and a curse" to Cherrapunji, which is considered the wettest spot in the world. Despite the annual deluge, the Indian village continues to suffer from drought-like conditions since most of the trees and other vegetation in the area have been removed by deforestation that has grown to characterize wide expanses of the Third World.

The hilltop crowned by Cherrapunji was stripped of its rain forest decades ago. Village residents here walk miles to find drinking water and are limited to once-a-week baths. Crop irrigation is illegal. "Deforestation is taking place in a big way," said Suchendra Nath Deka, director of the regional meteorological center in Guwahati, located about 100 miles north of Cherrapunji. "When the trees and plants are removed, the water runs off immediately, and water shortages become a serious problem. As a result, excessive rainfall is both a boon and a curse to them." According to a report by the U.S. Embassy in India, studies indicate that India is losing more than 3 million acres of forest cover each year.

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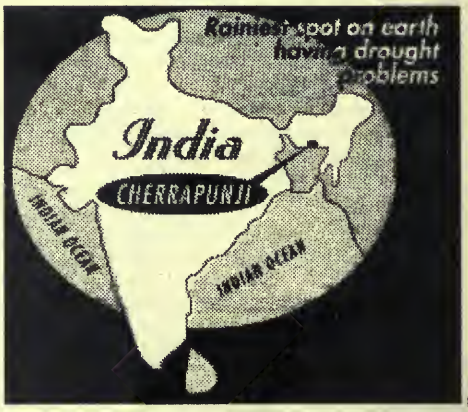

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